

**State of Wisconsin
Department of Natural Resources**

**Information Technology
Strategic Plan**

September, 2000

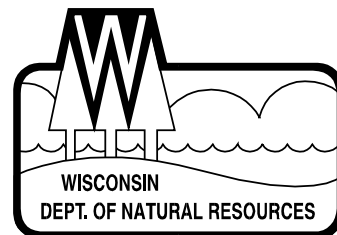


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Executive Summary

This IT Strategic Plan is the second Agency-wide endeavor that describes how technology will be used during the next 5 years to support DNR's mission and programs. Over the last two years, the Agency undertook a significant effort to develop a new Strategic Plan. That plan and the recently completed Strategic Implementation Plan identify specific business objectives that support the Agency's four Strategic Goals: Making People Our Strength, Sustaining Ecosystems, Protecting Public Health and Safety, and Providing Outdoor Recreation. Information technology is one of the foundations that will help our staff achieve our Strategic Goals and Objectives. The Agency alone cannot make the decisions and progress needed to continue to protect and enhance Wisconsin's vast resources and excellent environment. We rely on assistance and participation from partners, customers and the public. Information technology will help all of us work together and make informed decisions.

In developing the IT Strategic Plan, a team of dedicated professionals designed a methodology that links the Agency's Strategic Implementation Plan with technical requirements. The technical requirements identify trends and directions that are instrumental in providing support to the business functions. Future states of the four IT architectures (Application, Data, Technology, and Organization) are then identified, based on technical requirements and statewide influences.

Comprehensive technical requirements, future architectures and Agency-wide strategic projects establish how IT supports the Agency's Strategic Goals and Objectives. We recognize the importance of establishing GIS as an Agency asset for the public, and the need to integrate spatial with tabular data for wiser decision making. We are planning ahead for the E-Government opportunities available through the use of the Internet. Agency staff must be adequately educated, trained and supported to facilitate the application of technology that will enable them to better perform their jobs and ensure consistency across the state. To achieve these goals, we must perceive information technology as an enterprise-wide endeavor, and work to establish more diverse funding mechanisms.

Many IT Strategic Projects contained in the previous plan are continuing. In addition, several new projects are identified by the planning team. These continuing projects and the newly identified projects encompass the universe of projects that the Agency is using to develop its project planning procedures and evaluation system. We want these projects to succeed and will routinely evaluate their progress to assure that the projects deliver the results expected.

This plan was developed in concert with the Agency's biennial budget request. Since the Plan is associated with the Agency's request and not the final approved budget, an implementation plan must be developed when the final fiscal condition is known. Fiscal and staff resources are limited and we want to be realistic in what can be accomplished. Along with the implementation plan, we will develop a timeline and criteria for evaluating the Plan itself. This ongoing cycle of planning, implementing, evaluating and adjusting fits the Agency's commitment to continuous quality improvement.

Introduction

Jack Ward Thomas, former U.S. Forest Service Chief, once declared “ecosystems are not more complex than we imagine...they are more complex than we *can* imagine.” Fortunately, the same cannot be said for IT systems...yet. Careful study of system requirements produces a design and strategy for meeting objectives. This plan is a result of that study and design, and provides the Department of Natural Resources with an IT strategy that will take the Agency’s IT endeavors through the next biennium and beyond.

This IT Strategic Plan contains the standard planning elements: a vision for the future, identification of business objectives, inventories of existing IT resources, needs assessments and identification of IT projects that address strategic business needs. Equally important, however, this IT Strategic Plan is developed in concert with the Agency’s ‘01-’03 biennial budget, where planned IT activities are integrated with Agency budgets and ‘01-’03 budget initiatives. This integration provides the Agency with a detailed understanding of the dollars and human resources needed to implement the IT Strategic Plan. This understanding, in turn, adds value to the Agency’s IT Strategic Plan, and changes it from a static document to one that responds to changes in budgets and priorities. As such, the IT Strategic Plan will provide guidance for ‘01-’03 work planning and will become the touchstone for guidance should new resources become available, or IT budgets shrink.

Funding for Enterprise IT has been, and continues to be a challenging and controversial activity. Demand for more IT integration results in greater complexity and consequently greater costs to own and operate. Agency administrators struggle with the options and tradeoffs that exist in response to increased demands on finite resources. In the past, IT investments were justified in terms of efficiencies achieved and dollars saved. Initial gains in productivity, however, are now replaced by demands for more complicated systems and transactions. Without question, IT capabilities are growing and provide unique solutions to business needs. This sentiment is supported when the Agency’s strategic business goals and business objectives are reviewed. For example, commitments to customer service requires that customers and staff have statewide access to information and services and information is comprehensive, accurate, and consistent. Similarly, protecting public health and safety requires swift and appropriated responses to contaminant spills and environmental disasters. Solutions to challenges such as these are firmly grounded in IT infrastructures and processes that support services, policy and decision-making. With this understanding, it becomes apparent that IT in itself, is a business requirement that is critical to the Agency’s strategic objectives, and has benefits that are intangible, extending far beyond efficiencies achieved and dollars saved.

Skepticism for IT and its place in government will likely dwindle as customers and external partners grow accustomed to IT solutions and their expectations increase. Two technologies, GIS and the Internet, are quickly emerging as standards in business and government. and are gaining favor in the public’s eye. Both technologies are impressive in their ability to integrate data and deliver services. Both technologies are very expensive to build and maintain.

If IT is to best serve the Agency and its customers, IT development must be balanced with an understanding of needs, costs, capabilities, and budgets. The Agency’s Core IT Planning Team developed this plan with the intent that it provides information and analysis necessary to achieve this balance. This understanding will enable the prudent use of IT to manage and care for the environment and natural resources of Wisconsin.

Background

The Department of Natural Resources submitted an Information Technology (IT) Strategic Plan to DOA in September, 1998. At that time, the Agency's new Strategic Business Plan had not been completed, and many of the basic planning components were not in place. To help identify business and technology needs, and develop the IT Strategic Plan, the Agency contracted for the services of Grossenbach, Purtell and Associates. These consultants worked extensively with a newly formed IT Core Planning Team to develop the Agency's first IT Strategic Plan that resulted from Agency-wide participation.

The 1998 IT Strategic Plan set the stage for much of the IT-related work that followed. In June, 2000, the Bureau of Enterprise Information, Technology and Application (BEITA) was reorganized to become more responsive to the Agency's newly defined business and technology needs. In addition, the IT Strategic Plan guided the development of BEITA's biennial work plan. In October, 1999, the Agency also established BIZWIZ, a "team of business experts that are versed in technology to advise senior management on IT issues" (BIZWIZ Charter, Appendix A). This team's primary purpose "is to review, make decisions, and inform/consult with senior management on all key information technology related issues...". These issues include IT Portfolio, IT investments and priorities, IT opportunities and new technologies, IT standards, and IT budget, process management, participation, and implementation. The BIZWIZ Team is headed by the newly created Chief Information Officer (CIO), an IT advisor who works extensively with senior management.

The IT Strategic Projects identified in the 1998 IT Strategic Plan also established a need for systematic project planning, implementation and review. In February, 2000, the BIZWIZ Team contracted with Florida Management, Inc., to provide Project Management Training for IT Project Leaders, and related IT staff. A project management methodology and discipline was instituted across the Agency, and BIZWIZ began a quarterly review of IT projects to identify areas of risk, interdependencies, and opportunities for cooperation and resource sharing across projects.

Clearly, the 1998 IT Strategic Plan provided meaningful direction for IT activities that ensued, and created an environment for IT assessment, planning and implementation. This 2000 IT Strategic Plan builds on the foundation set in the previous plan.

Vision Statement

On June 30, 1999, the Natural Resources Board unanimously approved a revised mission statement and new strategic plan for the Wisconsin Department of Natural Resources (http://www.dnr.state.wi.us/aboutdnr/strategic_plan.html). The revised Vision Statement for the Agency is:

We share responsibility as natural resources stewards with Wisconsin's citizens, governments, businesses and visitors. We recognize the air, land and water are interconnected in sustaining all life, in protecting public health and in achieving healthy, diverse ecosystems and the sustainable economies that depend on these ecosystems. We recognize that forestry, farming and nature-based recreation – like hunting, fishing and trapping – are key to the state's economy and quality of life. We value our dedicated staff and provide them with the tools and training needed to ensure that Wisconsin has the best-managed natural resources in the world.

The Agency's Strategic Plan is supported by the Vision Statement for this IT Strategic Plan:

DNR is the best at applying information technology solutions to meet our customer needs. Information is shared with all people, in a form they can use, where and when they want it, to help in making knowledgeable decisions and choices.

The 2000 IT Strategic Plan and Its Methodology

The 2000 IT Strategic Plan is the product of the Agency's Core IT Planning Team, assisted in part by the contracted services of Grossenbach, Putrell and Associates. The methodology used to develop the 2000 IT Strategic Plan is borrowed from that used previously in the development of the 1998 IT Strategic Plan. This methodology has been changed, however, to take advantage of the Agency's new Strategic Implementation Plan, and to better conform to the DOA guidance for IT Strategic Planning. The Agency's IT Core Planning Team relied on the DOA guidance to develop this methodology that appropriately links our business Strategic Plan to IT support for the Agency's mission.

Key to this methodology is the understanding of the interdependencies between IT Strategic Projects and the four IT Architectures that support them (Fig. 1). Future needs of IT Architectures often drive the development of Strategic Projects, and Strategic Projects in turn identify areas of need within the Architectures. These dependencies are identified in the planning process.

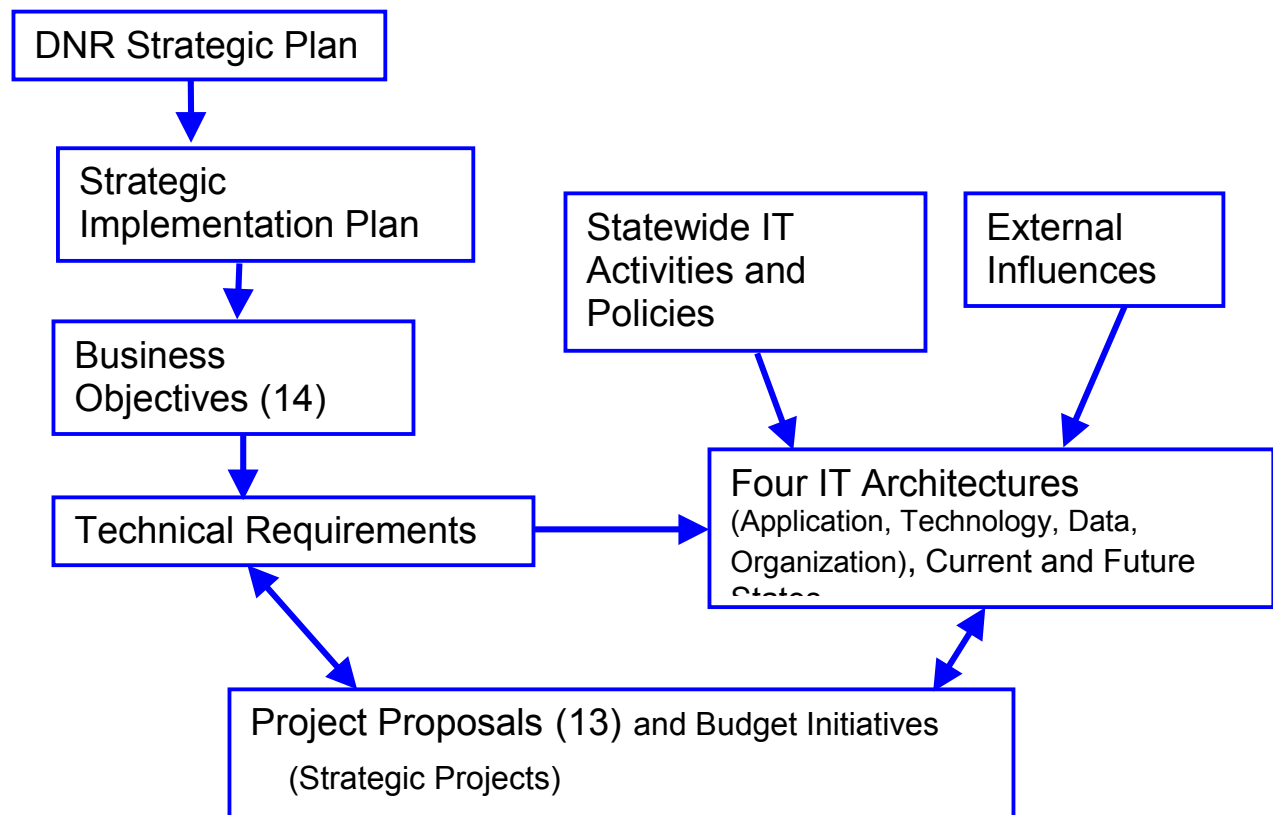


Figure 1. Flowchart showing the IT planning process and the relationship of the planning elements.

The 2000 IT Strategic Plan and Its Methodology

Because the successes of the IT Strategic Projects (and related Architectures) are largely dependent upon appropriate funding and staffing, IT planning requires the development and integration of budget initiatives for inclusion in the Agency's '01-'03 Biennial Budget. From insights gained in the preparation of the 1998 IT Strategic Plan, the Agency realizes that there was a disconnect between IT planning and the biennial budget process, which the new plan addresses. The 2000 IT Strategic Plan provides the integration of biennial budget development with IT Strategic Planning, and represents this Agency's best effort to date in evaluating and identifying the resources required to meet the IT needs of this Agency. The 2000 IT Strategic Plan provides the Agency with the opportunity for developing a meaningful implementation plan when budgets are approved and finalized. The IT Strategic Plan includes budget information current through August , 2000, but does not reflect updates. A completed budget was submitted to the Natural Resources Board for approval and delivered to DOA for consideration, September, 2000.

Inputs into the 2000 IT Strategic Planning process (Fig. 1) include goals and business objectives identified in the Strategic Implementation Plan. These planning elements provide a clear understanding of the Agency's business needs and are used to frame the Agency's Technical Requirements. Additional inputs include statewide IT activities and policies, external influences and the future needs of the four IT Architectures.

Outputs of the 2000 IT Strategic Plan are:

- Identification of the Agency's Technical Requirements
- Descriptions of the Agency's Four IT Architectures.
- Identification and descriptions of the Agency's Strategic Projects.
- Integration of the Agency's '01-'03 Budget Initiatives that support Strategic IT Projects and IT Architectures
- Anticipated implementation and work plans, and timeline for development of future IT Strategic Plans (Appendix B).

The 2000 IT Strategic Plan and Its Planning Elements

1. Business Goals and Objectives

The Strategic Objectives identified in the Agency's Strategic Implementation Plan are used to assess the Agency's IT Technical Requirements. The four strategic goals and fourteen strategic objectives are:

Goal: Making People Our Strength

1. Develop and maintain healthy interactive partnerships with all interested parties throughout the state to work on a wide variety of issues.
2. Deliver excellent customer service and, in situations where we can not deliver what our customers/partners would like, we will be respectful and courteous in explaining our response.
3. Build and support a top-notch staff of diverse, committed people at all levels of the department.
4. Department staff will be supported, trained and mentored through systems that allow them to manage workload, be productive and maintain a safe work environment.

Goal: Sustaining Ecosystems

1. By 2003, working with others, the department makes all ecosystem-based project decisions using integrated planning and management methods. Decisions and actions focus on preventing problems and restoring habitat.
2. We will increase support to the public through sharing information, technical assistance, and incentives to enable them to make informed personal decisions and to participate meaningfully in public decision-making.
3. The department will demonstrate environmental responsibility through the use of selected and approved environmental management systems (e.g. ISO 14001) as a part of decision making and operations. We will work with and support the private sector in the application of these systems.
4. Enact by 2002 a pilot alternative regulatory framework based on superior environmental performance (e.g., Green Tier and Project XL) and, based on program evaluation, enhancements will be proposed for the program by 2006.

Goal: Protecting Public Health and Safety

1. Establish standards to protect human, fish and wildlife health and forests, prairies and wetlands, etc. from pollutants in air, soil, sediment, groundwater and surface water.
2. Public safety is maintained and enhanced through fire protection and suppression, dam safety inspections, recreational accident prevention and law enforcement services.
3. Use DNR reporting systems, inspections and other compliance tools to ensure that businesses, municipalities and citizens comply with laws and regulations to restrict pollutant discharges, emissions and releases.

The 2000 IT Strategic Plan and Its Planning Elements

Goal: Providing Outdoor Recreation

1. By 2007, with the support of partners, acquire, develop and maintain publicly accessible properties and facilities at a level that supports ecosystem sustainability and public use to meet an expected 5% increase in Wisconsin's population.
2. By 2007, evaluate and reduce recreational use and user conflicts that negatively impact citizens or the environment.
3. By 2007, DNR staff and other public land owners use social and economic data to make decisions about recreational use and user satisfaction.

2. Technical Requirements

The Agency's Technical Requirements are similar to the Technical Trends identified in the 1998 IT Strategic Plan. Technical Requirements define the general IT needs of the Agency, and provide themes and direction for work that follows. The Technical Requirements are derived in part from the Agency's Business Objectives identified above (Fig. 1 and Table 1). These Technical Requirements are:

1. Establish mechanisms to identify, fund, develop, implement and manage enterprise wide integrated technology, data and applications that are Agency driven and reinforce performance measurements.

The Agency has a need to examine systems development and technology deployment from an enterprise-wide perspective. "Establish a mechanism" suggests the development of policies and processes that direct enterprise-wide IT activities. These activities include IT funding, project and application management, and decision making. This technical requirement assures that IT systems and activities address priority business needs of the Agency.

2. Establish GIS as an Agency and public asset, integrated with tabular data, accessed from remote locations, to make this technology the basis for organizing and using geographic information.

As custodians of the State's land, water, and air resources, the Agency has a growing need to integrate data collected from disparate sources. GIS technology is a powerful tool that can capture, update, analyze, combine and display all forms of geographically-referenced data and information. GIS technology is an enterprise-wide asset and as such requires support and funding. GIS data and applications must be distributed to Agency staff to support planning, implementation and evaluation of work activities, and to our customers to support information needs.

3. Fully support the Internet as a tool for information exchange, access, and business transactions with staff and customers.

The Internet has a vast potential to support the Agency's business functions and requirements. However, like much of the public sector, DNR has been slow to apply Internet technology in fulfilling its business needs. Policies, strategies, staffing, and infrastructure need to be in place to support Internet development and use. The Internet and its application within public sector (E-Government) has strong alignment with all of the Agency's Business Objectives (Table 1), and demonstrates the generic utility of this important technology.

The 2000 IT Strategic Plan and Its Planning Elements ---

4. Design IT education, training and support infrastructure to deliver services to DNR staff which facilitates application of technology to DNR program objectives and activities.

We suspect that opportunities for delivering services and information to our customers are lost when Agency staff are not able to use available technologies appropriately. By providing IT training and support to our staff, appropriate technologies can be best used to meet customer needs. This Technical Requirement supports the Agency's goal of making people our strength (Table 1).

5. Develop and deploy technology so that all DNR staff and customers have access to information that will enable them to better perform their jobs and ensure consistency across the state.

There is a growing dependency within the Agency on networked services that connect our staff to applications and information. E-mail, GIS and the Internet are examples of utilities that are network-dependant. The information systems that are enabled by the network require us to continue to develop, maintain and support network technology. This technical requirement has strong alignment with the Agency's strategic goals of making people our strength and sustaining ecosystems (Table 1).

6. Develop applications and required infrastructure to integrate appropriate data for use by DNR and its customers.

An enterprise approach to IT, in itself, requires integration of systems, applications, and data. Every Technical Requirement or IT Architecture is dependant on integration. The importance of deploying an integrated IT infrastructure is elevated further by making it a technical requirement. The ubiquitous need for data integration is demonstrated because every Agency Business Objective is in some way dependent upon information and its integration with other information (Table 1).

3. Enterprise-wide IT Activities and Policies

Statewide activities and policies affect primarily two critical focus areas associated with the Agency's Technical Requirements: GIS and the Internet. Both of these focus areas deliver critical services to the Agency's internal and external customers, and both present opportunities for data integration and process streamlining. GIS and the Internet also require extensive infrastructure to develop and support, thereby requiring substantial investments. Understandably, these IT focus areas attract continued scrutiny and review in an effort to reduce costs and standardize processes. At this time, IT activities outside the DNR will likely advance these technologies, alter the IT landscape, and enable processes that add value to the systems in place.

GIS: GIS and related technologies are a perfect fit for land and water stewardship. Subsequently, state agencies, tribal, county, and municipal governments have made substantial investments in GIS to meet their information needs. Although comprehensive data standards are not in place, the state's Land Information Program is well positioned to identify standards, guidelines, and processes that enable data sharing and cooperation. The Land Information Program is perceived as a strong partner that adds value and positively impacts the Agency's geographical information systems.

Internet and E-Government: Today, it is virtually impossible to underestimate the potential of the Internet and its ability to provide government services and information needs. Industry and the

The 2000 IT Strategic Plan and Its Planning Elements ---

private sector continue to increase its Web presence and use the Internet to provide services and streamline processes. As Web use increases, E-business becomes the rule, not the exception. Public perceptions and expectations are changing to include E-business as the norm for not only the private sector, but also the public sector (E-Government). State activities such as the Web Identification Management Architecture Project (WIMAP), State Technical Advisory Council (STAC), and the draft document "On-line Wisconsin" demonstrate state government's profound interest in this technology, and a willingness to embrace E-Government as an IT solution for providing better service. There exists the distinct possibility that the successes in these arenas will provide solutions to Internet technical issues involving portals, personalization, Web-based transactions, and security. These issues may be resolved outside the Agency, thereby eliminating the need for each state agency to find its own solutions to these technical issues and policies.

4. External Influences

A large number of external influences affect the Agency's IT planning both directly (IT industry changes) and indirectly (information needs of the Agency's customers). As the IT industry changes, the Agency has to incorporate appropriate changes that are needed or required to keep its infrastructure and applications functioning. The weakening support for Open VMS causes a shift to UNIX. The advent of ArcSDE changes how we look at GIS. New versions of ORACLE introduce Internet enhancements or capabilities in applications. Changes in Federal and State laws make application changes necessary. The needs and desires of the regulated community and our customers causes us to change applications leading us to an E-Government approach for data gathering, presentation, and analysis. Budgetary constraints limit the amount and type of infrastructure the Agency can purchase. These and many other changes have been incorporated into the Agency's Architectures and budget initiatives and are reflected in the IT Strategic Plan.

5. IT Architectures

The Four IT Architectures describe the Agency's IT assets and infrastructures that are in place and those that are planned for development (Appendix C). The future needs of these architectures are based upon the Agency's Technical Requirements, statewide activities and policies, external influences, and IT Strategic Projects (Fig. 1). These architectures describe the IT infrastructures that are the foundation for our IT systems, and resources needed to support these infrastructures are reflected, in part, in the Agency's budget initiatives.

6. IT Strategic Projects

IT Strategic Projects (Appendix D) are planned IT activities and investments critical to the Agency and its business needs. These 12 projects are a subset of all of the ongoing and new IT projects, and are elevated in importance because they support the current and future needs of the Agency's IT Architectures, Technical Requirements, and Strategic Goals. Fiscal estimates included in each project description do not represent a commitment by the Agency to fund projects at that level. IT Strategic Projects are base-funded, funded through budget initiatives, or a combination of both. Where applicable, IT-related budget initiatives are directly or indirectly linked to the respective IT Strategic Projects (Appendix D). Once the biennial budget is passed, the Agency will determine the financial allocation to each project based on priority, need and availability of funds.

Agency policy now requires that IT Strategic Projects have executive sponsorship and formal planning documents to facilitate tracking and review. The BIZWIZ Team will conduct quarterly

The 2000 IT Strategic Plan and Its Planning Elements ---

reviews of these (and other IT projects) to track progress, identify interdependencies, and help manage risk.

7. IT Implementation Plan

A strategic plan is useless without the resources needed for implementation. Implementation of the Agency's IT Strategic Plan is closely associated with the planning elements that identify IT funding and staffing, and the '01-'03 budget initiatives that underwrite IT Strategic Projects, IT infrastructures, and IT related program initiatives. The Agency will develop an implementation plan for this strategic plan after passage of the FY'01-03 budget. Final budget decisions and internal allocations may result in the scale-down or elimination of some projects or architectures. An evaluation process will be developed as part of the implementation plan.

The development and maintenance of the Agency's IT Architectures and Strategic Projects are dependent upon the Agency's existing FTEs and base funding, and new resources identified in '01-'03 budget initiatives. Funding and staffing required to support existing and proposed IT infrastructures, was determined from analysis conducted by the Agency's BIZWIZ Team. This analysis identified infrastructure components, their respective functions, their current state and their desired or future state (Table 2). This analysis was the basis for '01-'03 budget initiatives developed by the BIZWIZ Team. These budget initiatives describe dollars and staffing needed to support core elements of the Agency's IT operations. These budget requests stand alone, and the dollars and FTEs therein are not represented in other department budget initiatives that support individual IT projects or applications.

In previous years, budget requests for individual projects often included dollars needed to underwrite aspects of the Agency's IT infrastructure. However, this approach was flawed, in that 1) estimates of IT resources needed for a project were often underestimated, and 2) approval of a budget initiative was always uncertain. Typically, the short list of approved budget initiatives left critical gaps in resources because each was considered by itself instead of looking at how they all were to be integrated.

State guidelines for '01-'03 budget development and limited budgets did not allow full-funding of the BIZWIZ Team's IT infrastructure funding request (Table 2). However, the analysis provided in Table 2 provided Agency's administrators with an understanding of the consequences of spending cutbacks, and provided early feedback to IT staff as to what aspects of the initial IT Strategic Plan could be implemented. This analysis will provide the Agency with a basis for updating the IT Strategic Plan after the Agency's proposed budget is finalized and approved by the Natural Resources Board in September, 2000. Similarly, this analysis will provide the Agency with the information needed to develop an IT Strategic Implementation Plan, when the '01-'03 budget is passed by the legislature and signed by the Governor.

The updated IT Strategic Plan will also be used later this year, when work-planning for the '01-'03 biennium begins (Appendix B). Work planning will be revisited in 2001 when the '01-'03 budget is signed, and an IT Implementation Plan is completed.

Table 1. Relationship between Agency Business Goals/Objectives and Agency IT Technical Requirements. Check mark indicates strong alignment between Business Objective and Technical Requirement.

Technical Requirements	I. Making People Our Strength				II. Sustaining Ecosystems				III. Protecting Public Health and Safety				IV. Providing Outdoor Recreation			
	Develop and maintain healthy interactive partnerships with all interested parties throughout the state to work on a wide variety of issues.	Deliver excellent customer service and, in situations where we can not deliver what our customers/partners would like, we will be respectful and courteous in explaining our response	Build and support a top-notch staff of diverse, committed people at all levels of the department.	Department staff will be supported, trained and mentored through systems that allow them to manage workload, be productive and maintain a safe work environment.	Department makes all ecosystem-based project decisions using integrated planning and management methods. Decisions and actions focus on preventing problems and increase support to the public through sharing information, technical assistance, and incentives to enable them to make informed personal decisions and to participate meaningfully in selected and approved environmental management systems (e.g. ISO 14001) as a part of decision making and operations. Enact a pilot alternative regulatory framework based on superior environmental performance	Establish numeric standards to protect human, fish and wildlife health and forests, prairies and wetlands, etc. from pollutants in air, soil, sediment, groundwater and surface water. Public safety is maintained and enhanced through fire protection and suppression, dam safety inspections, recreational accident prevention and law enforcement services. Use DNR reporting systems, inspections and other compliance tools to ensure that businesses, municipalities and citizens comply with laws and regulations to restrict pollutant	With the support of partners, acquire, develop and maintain publicly accessible properties and facilities at a level that supports ecosystem sustainability and public use to meet an By 2007, evaluate and reduce recreational use and user conflicts that negatively impact citizens or the environment.	DNR staff and other public land owners use social and economic data to make decisions about recreational use and user satisfaction								
Establish mechanisms to identify, fund, develop, implement and manage enterprise wide integrated technology, data and applications that are agency driven and reinforce performance measurements.	➤	➤		➤	➤	➤			➤				➤			➤
Establish GIS as an agency and public asset, integrated with tabular data, accessible from remote locations and supported, becoming the basis for organizing and using geographic information.	➤	➤		➤	➤	➤			➤				➤			➤
Fully support the Internet as a tool for information exchange, access, and business transactions with internal and external customers.	➤	➤	➤	➤	➤				➤				➤			➤
Design I.T. education, training and support infrastructure to deliver services to DNR staff which facilitates application of technology to DNR program objectives and activities.	➤	➤	➤	➤	➤				➤				➤			
Develop and deploy technology so that all DNR staff and customers have access to information that will enable them to better perform their jobs and ensure consistency across the state.	➤	➤	➤	➤	➤				➤				➤			➤
Develop applications and required infrastructure to integrate appropriate data for use by DNR and its customers.	➤	➤	➤	➤	➤				➤				➤			➤

Table 2. IT Infrastructure Components in Secretary's Critical Initiatives for 2001-2003 Biennium.

Area	Subarea	What it does	Problem	Budget	
				Need	Requested
Security	General	Controls access to the network and to the resources within the network.	Needs & requirements of Internet activities (EMS, E-Gov, etc.) and changing operating system requirements have put a strain on ET to provide staffing for the function.	2 FTEs to develop, test, and maintain 1 st level security software.	Hire 1 FTE FY02
Security	Firewall	Prevents unauthorized access to our system from the Internet	Currently only one Firewall. If it breaks, our network would have no access from or to the Internet	Second Firewall	Purchase FY02
Security	NT	Prevents unauthorized access to resources within our network by DNR staff.	Windows 2000 and its Active Directory function need to be tested and implemented	1 Server and software See NT2000 under System Software	
Security	NDS	NDS eDirectory prevents unauthorized access to resources within our network by our customers, suppliers, and business partners. Enables external partners to interact with DNR information systems at a more detailed and intimate level. Allows DNR systems to confirm that external entities are who they say they are. Regulated entities could report electronically. This item is a foundational element for developing an E-Government & E-commerce	This is required part for E-Gov recommended by WIMAP. DNR does not have at present.	2 Server s (1 test and 1 production) and software	Purchase 1 Server & SW FY02 Purchase 1 Server & SW FY03
Oracle Data Bases		Relational data base that houses the integrated data within the DNR, both GIS and non-GIS	The number of instances of Oracle needed has increased without any increase in support staff. Application development environment is not Best Management Practice (BMP) but needs to be to reduce costs, development time and potential for problems. See also 3Stage Environment.doc	3 FTE Support staff 2 Servers and software needed	Purchase 1 Server & SW FY02 Purchase 1 Server & SW FY03 Hire 1 FTE FY02

Non-Oracle Data	Most of our older (legacy) applications have not been, and probably will not be converted to Oracle. This includes COBOL, SAS, and other applications. Often program bureau staffs use these systems to write programs that analyze data, including data extracted from Oracle databases.	These systems currently perform under the VMS operating systems. VMS support and development from COMPAQ is be phased out and the agency must switch to COMPAQ TRU64 UNIX because of this. This migration must be completed by 2002 and means changing servers, software, and applications to use UNIX. See also 3Stage Environment.doc	2 Servers and software needed	Purchase 1 Server & SW FY02
GIS Data & Maps	GIS data and applications are dispersed because of the differing requirements of static GIS data (Internet Map Services, IMS), dynamic GIS data (Spatial Data Engine, SDE), GIS applications (ArcInfo), and the desktop (ArcView).	ESRI, the manufacturer of our GIS software (IMS, SDE, & ArcInfo) has moved from static (IMS) to dynamic (SDE) data presentation. The desire by program bureau staffs to present information to DNR staff, customers, and regulated communities in a map format (ATRI, SWIS, Wisconsin Waters Initiative, R&R) requires more HW, SW, and BEITA staff resources than currently exist. This is to be phased in so that at the beginning of FY04, when bureau applications will come on line, the resources will be available. Large number of servers needed for expected capacity, BMP for development (See 3Stage Environment.doc), and for reliability.	2 FTE support staff 5 Regional GIS FTEs 9 Servers and software	Purchase 2 Server & SW FY02 Purchase 2 Server & SW FY03 Hire 1 FTE FY02
Content Management	Controls the content of a document by regulating access and recording who has modified it. Allows for multiple versions of a single document and version control. Provides indexing of documents to reduce search time. Reduces data duplication and programmer time. Document management is a sub set of a complete Content Management solution.	NO existing infrastructure (Servers, software, support staff). Researching solutions currently (FY01). Includes EMS needs. Include needs of Electronic Files request of RR. May, depending on solution chosen, solve our document management needs. Phase in servers across the biennium.	1 FTE support staff 3 servers and software	Purchase 1 Server & SW FY02 Purchase 1 Server & SW FY03
Web Services	General	The Internet Strategic Plan (In progress)		

		information can be accessed from the Web (both Internet - FACT and Intranet - ATRI, Wis. Waters Initiative). The Internet Strategic Plan (in progress) and the E-Government initiative call for an increasing roll of the Web for information access by both customers and staff. The DNR Strategic Plan also calls for expanded use of the Web. This will allow staff to more efficiently and effectively answer customer questions and allow them more time for fieldwork.	and the E-Government initiative in the IT Strategic Plan (In progress) both call for an increased use of the Web to obtain and analyze information by our staff and to collaborate with and provide information to our customers. The infrastructure being requested is to be phased in over the entire 01-03 biennium both because of the small support staff who have to do the work and because not all of the capacity will be needed until the beginning of FY04. A list of Internet application under development or planned for the 01-03 biennium can be found at Internet applications.doc .		
Web Services	Internet Information Server (IIS)	Currently the Internet Information Server (IIS) software provides most of these services.	Purchase servers and software to provide access to Intranet and Internet. Provides needed capacity and redundancies for both Internet and Intranet so that failure of a single server does not stop access. Build 3-stage environment for development (See 3Stage Environment.doc). Builds on existing infrastructure	9 Servers and software	Purchase 3 Server & SW FY02 Purchase 4 Server & SW FY03
Web Services	EA Server	Enterprise Application Server is a second software system that is needed for Web centric enterprise applications. The need for 2 systems is similar to the need for both Oracle and SAS/COBOL systems. EA Server provides resources not available in IIS. It makes for an easier migration of Powerbuilder (e.g. Oracle) applications to the Web. Both are needed to provide the information that staff and customers need.	New area of emphasis building upon a very limited infrastructure being purchased in FY00 and FY01. Build capacity and 3-stage environment for development (See 3Stage Environment.doc).	1 FTE support staff 11 servers and software.	Purchase 1 Server & SW FY02 Purchase 4 Server & SW FY03 Hire 1 FTE FY02

Networking	Connected	<p>The local and wide area networks (LAN/WAN) interconnect our offices, desktops, and printers. Newer technology, which allows for faster data exchange between PCs and the rest of the network, has replaced older in the Central Office and newer Service centers. This allows for expanded use of instructional video and lays the groundwork for teleconferencing from users desktops. There are currently 53 interconnected offices.</p> <p>Smaller offices are not directly connected to the LAN/WAN because of the cost (\$12,000 per year) to connect them. Instead they use a dial-up facility that allows the end user to control costs and the amount of central services they use.</p>	<p>Convert the Regional Offices and older Service Centers to the newer technology. Increase if FY01 for T1 line costs by DOA was \$60,000. BEITA will be asked to use efficiencies elsewhere to meet this increase rather than asking for an increase in the IT Support Rate.</p>	<p>As per IMT this item was moved from the IT Support Rate to a budget initiative</p>	<p>Purchases in FY02 & FY03</p>
Networking	Dial-up		<p>Because the costs are born by the bureaus, they restrict usage. This reduces the amount of information that can be gotten to end users in the smaller field offices. OWA (Outlook Web Assistant) is being installed this year to partly reduce this cost. VPN (Virtual Private Network) is being researched this year to see if we can further reduce the present cost and provide better access to Department services, such as Email, and provide higher bandwidth to staff located at Field Stations and Parks. VPN may reduce the number of connected offices if we can use it rather than T1 lines to connect them.</p>	<p>Install VPN</p>	<p>No Request. Use existing funds.</p>
Networking	New Offices	<p>Connect new Service Centers as designated by IMT</p>	<p>Support the implementation of new Service Centers and Field offices.</p>	<p>Monies for LAN/WAN equipment</p>	<p>No Request. Use existing funds.</p>
Email		<p>Email servers are located in Central Office and Regional Offices to deliver and store Email.</p>		<p>No initiatives. Supported by the IT Support Rate.</p>	<p>No Request</p>
File Services		<p>File services allow for the storage and sharing of data between PCs and between PCs and servers. This reduces the amount of duplication of data, facilitates document interchange, and data sharing.</p>		<p>No Initiatives. Storage increased as needed in the IT Support Rate.</p>	<p>No Request</p>

Print Services		Print Server receives documents from other computers (i.e., Mainframes, Servers, and desktops) on the network and distributes them to designated printers throughout the network. Print servers are located in CO and the regions.	We need to add a second print server in Central Office to provide redundancy and fail over support for the current print server, which is a single point of failure. If this server were to have serious problems, there would be no printing in the CO.	1 Server and software	No Request. Use existing funds.
Backup Services		Data files and applications reside as files on disks. For reliability, these files need to be backed-up so that in case the file is destroyed or inappropriately modified, the information can be retrieved.	Changes from VMS to UNIX (see Non-Oracle Data above) make it necessary to change to a new backup system. This system will also allow the backup of PC files.	1 FTE support staff Expansion of hardware	Purchase expansion FY02 Hire 1 FTE FY02
Forms		Forms are used for internal and external data collection and dissemination. Using newer E-Forms, the information can be gathered on the Web as part of E-Government initiative and the data placed into Oracle databases as needed.		Convert maintenance for servers from IT Support Rates to base	Purchase FY02
System Software	NT2000	Windows 2000 will replace Windows NT as our current server software.	Develop and test Windows 2000 before putting it into production on the servers for Email, File services, print services, Networking, Security, etc. Part of this is also concerned with the security function.	1 server and software. NOTE: recent seminars have indicated that we will probably need a more extensive environment for development and testing than this request anticipated.	Purchase FY02
System Software	Capacity	As the infrastructure grows and as the applications become more integrated and Web centric, we need to have a more comprehensive planning effort to ensure that we have the correct infrastructure. This requires automated tools for capacity management to allow us to be certain that we have the correct amount (and types) of servers so that our staff and external customers can get the information that they need in a timely manner.	We do not have any capacity management software or trained staff. We need to hire a consultant (FY02) to recommend software, to train new staff and to help us start managing capacity.	1 FTE support staff, consultant, and software	Purchase FY03

System Software	Productivity	As the infrastructure grows and as the applications become more integrated and Web centric, we need to have a more comprehensive planning effort to ensure that we have the correct infrastructure. This requires automated tools for performance to allow us to balance the computing load across servers to be certain that each server is used optimally	We do not have any performance management software or trained staff. We need to hire a consultant (FY02) to recommend software, to train new staff and to help us start managing capacity	1 FTE support staff, consultant, and software	Purchase FY02 Hire 1 FTE FY02
System Software	SMS	Allows BEITA to remotely install software on PCs and to survey what software is on any PC.		Working fine. No initiatives.	No Request
System Software	Virus	Provides checking for viruses at the PC level	Investigating virus protection at the network level currently (FY01). No Initiatives	No Initiatives	No Request
Desktop		Provides end user with word processing, spreadsheet, limited database, Email, scheduling, and other software needed for them to perform their jobs.	Sometime during the 01-03 biennium the standard desktop suite and operating system will be changed to Windows 2000 and Office Pro 2000.	Separate initiative for purchasing software upgrades	No Request
Printers		Provide hardcopy output. Generally purchased by the individual bureaus.		No Initiatives	No Request
Other	MLP	Currently the infrastructure is supported by BEITA base and IT Support Rate. Much of the latter goes to pay for infrastructure purchased by MLP.	The IT Support Rate (AKA PC Rate) is a burden on bureaus both financially and from a planning perspective.	Money was requested to pay off the existing MLPs and thus lower the IT Support Rate	No Request. Use existing funds.

Appendix A

BIZWIZ Charter

Appendix A BIZWIZ Charter

Background

Wisconsin DNR recently completed a re-engineering IT project. A major recommendation was the creation of a team of business experts that are versed in technology to advise senior management on IT issues. The term BIZWIZ was coined for the group to recognize the business experience and technical expertise required by the members of the team. As stated in the Reengineering IT Executive Summary: "The BIZWIZ Team would be the IT advisory arm of I.M.T. It is envisioned that the BIZWIZ Team would be the primary and preferred conduit for all IT issues in the Department. The I.M.T. would delegate decision making authority to BIZWIZ to improve cycle time (responsiveness to issues, projects and proposals) while retaining decision making authority on issues with fiscal or position implications."

Purpose

BIZWIZ is an nine-member team consisting of agency business and information technology specialists. Its primary purpose is to review, make decisions, and inform/consult with senior management on all key information technology related issues to include: IT Portfolio; IT investments and priorities; IT opportunities (for example Internet/Intranet strategy development, GIS strategy development, wireless R&D); IT standards; and IT budget, process management, participation, and implementation.

Members

Chief Information Officer	Brenda Hagman
Land Division Representative	Tim Weiss
Water Division Representative	Alan Lulloff
Air & Waste Division Representative	Dale Ziege
Enforcement & Science Division Representative	Gene Lange
Administration and Technology Representative	Carrie Roesch
CAER Division Representative	Open
Forestry Division Representative	Gary Steffen
Regional Representative	Gary Kulibert

It is expected that BIZWIZ members will spend at least 50% of their time to BIZWIZ activities. Therefore, current workload and assignments should be adjusted to allow for BIZWIZ activities.

In addition, IT staff support is available upon request.

Tenure

Team members will serve a two-year term at which time they will rotate out and be replaced by another representative from the same business area of the agency. This rotation will provide agency-wide IT exposure to as many agency staff as possible. Members will rotate on a staggered-year basis to provide continuity to the team. Five members would have two-year rotational assignments, four members would have a one-year assignment, and future assignments would be staggered after the first year. Duration of member assignments should be specified in the assignment letter.

Appendix A BIZWIZ Charter

Roles and Responsibilities

Planning and Selecting IT Investments

- Review, inform and make recommendations to senior management on “health” of the agency’s Information Technology Portfolio (a picture of IT investments in infrastructure, data, applications, hardware, software, and human resources).
- Identify opportunities to improve agency business through information technology.

Managing and Evaluating the Performance of IT Projects and Investments

- Review Strategic IT projects as identified in the Strategic IT Plan with Executive Sponsors and project managers at key phases of the project planning and implementation process.
- Review and report to senior management on the status of Strategic IT investments, including cost, schedule, benefits, and risks.
- Review and report to senior management on completed projects to identify and assess lessons learned to enhance the success of future IT investments and projects. (Post implementation review process)

IT Budget

- Review funding and make recommendations to senior management to ensure that Strategic IT projects are adequately funded.
- Review, recommend, and forward to senior management the agency IT budget.

Process Responsibilities

In cooperation and collaboration with its partners, BIZWIZ will perform three roles relating to process changes as described in the Reengineering IT Project final report.

1. Process Owner – take full responsibility for the successful implementation of the following processes as described in the Reengineering IT Project Report:
 - * Strategic I.T. Plan – Manage and participate in the development of the Strategic IT Plan for the DNR, due at DOA in September of even years.
 - * Identifying Enterprise Initiatives – Identify and prioritize IT initiatives which would have agency wide value and benefit.
 - * Funding Enterprise IT Projects – Make recommendations to senior management to ensure that current and planned IT projects that have agency wide benefit and value are funded and have resources assigned to accomplish the objectives of the project.
 - * Project Management – Develop a consistent, agency wide methodology and process for introducing, planning, managing and evaluating all IT projects in the DNR.
2. Process Initiator and Participant – Initiate, review, analyze, collect input and comments from agency staff, and make recommendations and delegated decisions as participants in the following processes:
 - * Strategic IT Plan
 - * Identifying Enterprise Initiatives
 - * Funding Enterprise IT Projects
 - * Applications Planning
 - * H.R. Planning for Strategic IT Projects

Appendix A BIZWIZ Charter

- * Standards Development
 - * Exceptions to Standards
 - * Change Management
3. Process Oversight – Review project plans and progress toward implementation of the following processes:

Process	Process Owner
Desk top Installations *	BEITA
Desk top Component Installations*	BEITA
Planning Service Level Agreements*	BEITA
Data Sharing – External *	BEITA
Data Sharing – Internal *	BEITA
Break Fix Problem Management (Help Desk)*	BEITA
Asset Reporting and Management *	BEITA
Forms Development *	BEITA
Business Training *	BEITA
Professional Development*	BEITA

Process	Process Owner
Applications Planning*	BIZWIZ
H.R. Planning for Strategic IT Projects*	BIZWIZ
Standards Development*	BIZWIZ
Exceptions to Standards*	BIZWIZ
Change Management*	BIZWIZ

* Appropriate BEITA and BIZWIZ members will meet approximately every 6 months to review the status of these processes.

Focal Point for Agency Wide Issues, Projects or Proposals

Analyze, make decisions and recommendations to senior management and effected parties on IT issues, projects, or proposals that have agency wide implications. These issues, projects or proposals may be brought to BIZWIZ by staff or BIZWIZ members. When necessary and appropriate, BIZWIZ will review internal and external customer requirements, business needs, field requirements, technical, resource, financial and IT policy implications and make decisions and recommendations that are in the best overall interests of the DNR. BIZWIZ is committed to performing this key role in a timely manner recognizing that some issues will require analysis, review and comment by other agency participants. Once decisions and policies are made BIZWIZ will help communicate those decisions to the agency.

Decision Making Authority

BIZWIZ will make decisions and document those decisions, following the agreed upon process for the following IT areas.

- Standards
- Exceptions
- IT policy
- Identifying IT initiatives
- Issues, projects, or proposals that do not have position, funding or significant workload implications as long as they meet the agreed upon criteria for action by BIZWIZ.

Appendix A BIZWIZ Charter

- * Fits charter
 - * Strategic
 - * Agency wide impact, benefit or value
 - * New opportunity
 - * Gridlock (no action after a “reasonable” period of time)
- BIZWIZ will make recommendations to senior management on issues, projects or proposals that DO have position, funding, or significant workload implications.

Appendix B

IT Planning and Implementation Timeline

Appendix B IT Planning and Implementation Timeline_____

Even Years

<i>January</i>	Begin discussion for setting “PC Rates” for pending fiscal year
<i>March</i>	BIZWIZ begins review of IT Budget Initiatives; examines dependencies and develops infrastructure budget initiatives
<i>April</i>	IMT approves “PC Rates” for pending fiscal year
<i>June</i>	BIZWIZ begins integrating budget initiative information into New IT Strategic Plan
<i>September</i>	Submit IT Strategic Plan to DOA Begin work planning for next year or next biennium

Odd Years

<i>January</i>	Begin discussion for setting “PC Rates” for pending fiscal year
<i>April</i>	IMT approves “PC Rates” for pending fiscal year
<i>June</i>	Core IT Planning Team begins work on New IT Strategic Plan
<i>July</i>	Biennial Budget is approved and signed: BIZWIZ begins work on IT Implementation Plan and workplanning
<i>December</i>	Core IT Planning Team completes draft of New IT Strategic Plan, to be used as guidance for Biennial Budget development

Ongoing, as needed:

- BIZWIZ IT Project Review
- BIZWIZ/BEITA Mgt. Team check-ins

Appendix C

IT Architectures

Applications Architecture

The applications architecture refers to the framework for building and managing the automated processes or systems that an organization uses to support its programs and provide services to its customers.

1. Vision Statement

DNR's applications architecture enables the efficient development, deployment, and support of applications, within the E-Government model where appropriate, that exploit the most effective technologies, including GIS, to meet the business needs of the Agency and the information needs of its customers.

2. Application Portfolio

The Agency continues to support approximately 75 high quality applications, of limited scope, that meet program-specific needs. There are also a growing number of broader, more versatile, more accessible, and better-integrated applications under development that will meet internal and external Agency needs.

It is a given that GIS technology is an integral part of these development efforts, simply because that technology is critical to meeting the application requirements, based on business needs. Thus, there is no longer be a need to distinguish between GIS or "spatial" applications and "tabular" applications.

It is also clear that increased development efforts will be directed toward Web-centric applications that are supportive of the State of Wisconsin's E-Government initiatives.

3. Development/Support Tools and Staffing

Support continues for existing 2-tier client/server and host-based applications along with their batch components. Such applications are being enhanced within their technical structures to meet evolving needs, but new application development is moving toward the use of multi-tier technology. Multi-tier technology involves the use of at least 3 coordinated computers (tiers) to run an application: a database server that houses the data, an application server that contains the application components and logic, and the client machine that presents the application to the user. This allows applications to be maintained in a central, shared location without having to make upgrades to numerous client machines. It also allows easier sharing of common application components, and the ability to incorporate multiple servers in the "middle tier" to support any number of applications (thus the multi-tier designation rather than 3-tier).

DNR is now undertaking a project to address multi-tier technology in 3 phases: Phase I (completed) examined our existing application architecture and made recommendations for a target multi-tiered architecture and how to cost-effectively move to that environment. Phase II is a proof-of-concept on the recommendations from Phase I - applying these recommendations on a limited scope to confirm that the proposed environment will meet our needs. The end result of Phase II will be a recommendation on whether or not to continue to Phase III, which would be a production scale implementation of the proposed environment.

The need for multi-tier technology has been driven by an increasing demand for fully functional Web-based applications, and for the availability of data warehouses. The use of solid object-oriented techniques will be key to fully exploiting multi-tier technology, regardless of the tools chosen. And there will be an even larger need for reliable batch/background processing to populate and maintain major parts of the databases used to serve these Web-based applications.

Adequate resources for the development of Agency-wide applications will continue to be critical, and must include the direct involvement of DNR staff.

Application support for the 2nd level still needs to be upgraded, and at least partial outsourcing should be considered. For new projects, DNR developers must be working closely with contractors and program area staff throughout the project life cycle. DNR developers and contractors must be pooled so that expertise can be shared across projects.

4. External Influences

Upgrades: Continued support of existing applications will require significant resources over the next two years. Every existing application will be affected in some way by software upgrades. This fiscal year, DNR is upgrading ARC, the Oracle Database, and the Oracle Developer tool set. In addition, since 1988, DNR has been using the VMS operating system to run its host-based applications, and to build interfacing components for all applications. As of 7/1/2002, VMS will no longer be supported at DNR. Subsequently, all VMS code will need to be converted/rewritten into UNIX by that time. Other upgrades, unknown today, are inevitable within the next 3 years.

New hardware/software: The results of the multi-tier project and the degree to which ARC/IMS/SDE can be incorporated into the development environment will strongly influence how new applications are built and existing applications are enhanced. Development staff and Technical Support staff will need adequate training in the new tools to be able to meet most of the goals for 2001 and beyond.

Staffing vs. funding: Contractors now do most of the new application development. This is the result of FTE shortfalls. DNR lacks FTE staff to work closely with contractors during development, and the demand for applications that are funded but not staffed keeps growing. Our contractors are building large, complex applications that are foreign to DNR staff, yet need to be supported long after the contractors leave. This defeats the goal of reliable, adequately supported, expandable applications. Either adequate staffing must be provided or support must be contracted at costs that will likely exceed initial development costs.

5. Project Management Methodology/Application Review

The methodology used for developing and reviewing applications projects needs to be refined and streamlined, and then supported through work planning.

The basic project phases of feasibility, general design, detailed design, construction, deployment, and maintenance/support are compatible with industry norms and will continue to be followed whether projects are contracted or done in-house. Project phases will need to be compressed as much as possible to minimize "time to market" for applications. The review requirements and sign-off points within and between these phases must be identified. Minimum reviews will include project scope, development tools, application design, database design, graphic user-interface (GUI), pre-implementation, and post-implementation.

6. 1998 Goals vs. Reality

The following are the goals from the 1998 ITSP Application Architecture, with notes on progress:

- A. Develop applications that are aligned with priority Agency business needs.
 - GIS-based applications for decision support --- Aquatic and Terrestrial Resource Inventory (ATRI), and Surface Water Integration System (SWIS) are good examples.
 - Personnel/contact directory --- first version will go live FY01.
 - Budgeting/work planning support system --- being considered, based on automated work-planning pilot.
 - Customer product delivery system --- not addressed.
 - Employee activity tracking system --- Recruitment Tracking System is being developed; sponsored by Human Resources.
- B. Develop applications that are accessible internally and externally.
 - Use of supported tools which meet DNR standards --- done at project review points.
 - Use of Internet --- FACT.
 - Provision of metadata and online help --- metadata is a focus of ATRI.
 - Provision of user tools --- needs work.
 - Common look and feel --- C/S GUI standards in place; Web pages are reviewed by Web Administrator.
- C. Develop applications that are reliable and adequately supported, by both BEITA and customer staff, throughout their useful lives.
 - Management of migrations/upgrades --- needs constant attention.
 - Establishment of 2nd level support --- needs to be improved and institutionalized.
 - Allocation of support resources at the start of development --- a real sell job – true costs are significant.
- D. Develop applications efficiently, exploiting techniques and technologies appropriately.
 - Effective use of objects --- object development/naming standards being addressed; sharing of objects is improving.
 - Tools R&D --- multi-tier (production, development and testing) project is evaluating/testing potential development tools.
 - Acquisition of sharable/portable tools --- will take place after multi-tier proof of concept is successful (either with the proposed tools or an alternate set).
 - Tools training for developers --- must continue to be provided.
- E. Identify a realistic balance among workload, staffing, and quality.
 - Strong customer involvement and ownership in application development and support --- is improving ---- executive sponsorship is key.
 - Critical review of currently supported applications --- must be done through work planning.
 - Re-alignment of staffing for development and support --- is happening with ET reorganization implementation.
- F. Complete a successful Y2K conversion.
 - All applications functioning effectively beyond the year 2000 --- done.

7. Goals for 2001 and Beyond

- A. Develop applications that are accessible internally and externally.
 - Web-centric development that supports Wisconsin E-Government initiatives.
 - Use of supported tools that meet DNR standards.
 - Provision of metadata and online help.
 - Provision of user tools.
 - Common look and feel.
- B. Implement DNR Applications Planning Process (Identified as part of IT Reengineering).
- C. Develop applications that are aligned with priority Agency business needs.
- D. Develop applications that are reliable, adequately supported, and expandable by both IT and customer staff throughout their useful lives.
 - Management of migrations/upgrades.
 - DNR staff working closely with contractors and program area(s) throughout the project life cycle.
 - Establishment of application support beyond the Helpdesk.
 - Allocation of support resources at the start of development.
- E. Develop applications efficiently by exploiting techniques and technologies appropriately.
 - Effective use of multi-tier technology.
 - Effective use/reuse of objects.
 - Tools R&D.
 - Acquisition of sharable/portable tools.
 - Tools training for developers.
- F. Identify a realistic balance among workload, staffing, and quality.
 - Strong customer involvement and ownership in application development and support – including executive sponsorship of significant cross-program projects.
 - Critical review of currently supported applications.
 - Re-alignment of staffing for development and support.
 - HR plan for appropriate staff resources.
- G. Plan for obsolescence of applications.
 - Routinely monitor the costs to continue running existing applications and provide guidance for yes/no decisions.
 - Evaluate costs to upgrade/migrate individual applications to meet emerging standards (e.g. VMS → UNIX).

Data Architecture

Data Architecture refers to DNR's framework for collecting, storing, documenting, and distributing data that support the business objectives of the agency and its customers.

1. Vision Statement

DNR recognizes that its data are valuable business assets, and the agency leverages these data resources whenever possible throughout the lifecycle of the data (i.e., creation, distribution, use, maintenance, storage, and disposition). DNR's data architecture provides data, in an electronic format, that adequately support the business needs of the agency, external partners, and other customers. Access to DNR's data is easy, convenient, and reliable, with the Internet serving as the primary mode of data access. DNR helps its data producers collect or develop data that are as accurate, complete, secure and standardized as possible. Data provided to customers are understandable and easily integrated, and users are confident that the quality of DNR's data is high. The content and quality of DNR's data are documented consistently throughout the agency, and the agency maintains a central repository of this information to help users share data or assess the utility of existing data for their specific business needs.

2. Data Portfolio

Policies, Standards and Procedures: DNR has established or adopted several data-related policies, standards and procedures to improve the way the agency's data are collected, structured, documented and distributed:

- Oracle RDBMS standards promote consistent development of applications.
- Locational data standards facilitate consistent data collection, use, storage, documentation, and distribution of data throughout DNR.
- Required review of logical and physical data models for Oracle applications ensures adherence to appropriate standards.
- DNR metadata content standards (i.e., those defined by ATRI Project) promote consistent documentation of data throughout DNR.
- Data sharing policies describe robust procedures for DNR to provide data to its customers via the Internet and other media, and to receive data from its external partners.

Development and implementation of additional data related policies, standards, and procedures are proposed in the "Data Repository and Metadata," "GIS Framework and Data Collection," and "Distributed GIS" IT Strategic Projects.

Data Library Functions: DNR maintains several systems and functions that provide data-related library services to internal staff and external customers. However, these are not considered part of formal enterprise data repository or data warehouse:

- Agency-wide reference data tables support the use of standardized code values throughout DNR. These tables are used primarily in Oracle applications. Other data tables are shared among programs and applications, as appropriate.
- DNR's data administration menu (DAMENU) application identifies agency-wide Oracle reference tables, classwords, and common data elements.

- DVGISLIB (a modular structure for GIS data) facilitates distributed access to DNR's enterprise geographic information system (GIS) data layers. Customized GIS applications (e.g., DNRview) access these DVGISLIB data layers by using tables that contain the standardized paths to them.
- DNR's ArcStorm GIS library serves as a centralized location for enterprise GIS data layers. *Note: DNR plans to replace ArcStorm functions with Spatial Database Engine (SDE) functions.*

Development and implementation of more formal enterprise central data repository and data warehousing functions are proposed in the "Data Repository and Metadata" IT Strategic Project.

Data Access/Distribution Functions: The Internet and Intranet are becoming the primary conduits for providing access to DNR data and related policies, standards, procedures, files, etc. DNR also has procedures in place for sharing data via other media (e.g., tape, CD). Development and implementation of additional data access and distribution functions are described in the "Data Repository and Metadata," "GIS Framework and Data Collection," and "Distributed GIS" IT Strategic Projects.

3. Development/Support and Staffing

Data Administrator: DNR employs a full-time data administrator to:

- Coordinate the development and implementation of DNR's data related policies, standards, procedures, plans, etc.
- Review database application systems (e.g., data models, data table structures) to ensure adherence to data-related standards.
- Represent DNR on interagency data administration and warehousing groups such as the Wisconsin Information Resource Council (WIRC).
- Chair and organize DNR's internal Data Administration Group (DAG), which consists of BEITA and program staff who review data related policies, standards, etc.
- Maintain agency-wide reference data tables and DAMENU application.
- Help coordinate data-related activities with "forms" and "records" activities.

Other BEITA and program staff members also participate in data coordination and sharing, policy and standards development, and other data-related activities.

Data Modeling: DNR requires that the data administrator review logical and physical data models of Oracle applications to ensure adherence to appropriate standards. Various tools (e.g., TOAD, Visio) are currently used for data modeling in DNR. One outcome of the proposed "Data Repository and Metadata" IT Strategic Project will assist the standardization of data modeling tools and techniques within DNR.

Contractors: Data collected or developed by external contractors are required to meet the same standards as data collected or developed by DNR staff. Contractor-developed applications that provide access to DNR data should be consistent with agency data and datasharing policies, and should be integrated with existing data access tools. All contracts for data-related work should cite the appropriate DNR standards and procedures.

4. External Influences

Federal agencies such as the Environmental Protection Agency (EPA) and the U.S. Geological Survey (USGS) have developed data related policies, standards, and procedures that are used in DNR. As a state agency, DNR must also conform to data policies, standards, and procedures mandated by DOA. This includes any relevant policies and standards adopted by the Wisconsin Land Information Board (WLIB) and the Wisconsin Land Council (WLC). Finally, because DNR has many county/local partners and customers, programs often adopt county/local or Wisconsin Land Information Program (WLIP) standards and procedures to facilitate data sharing with these groups. The “Land Information Program: Requirements Phase” IT Strategic Project proposes to increase the effectiveness of data sharing by DNR programs, as well as the ability of programs to identify how various external standards and procedures relate to their business needs and functions.

Data Collection/Development/Modeling: DNR plans to move its Oracle and GIS applications toward object-oriented data models. This decision was prompted, in part, by the fact that the latest versions of DNR’s standard GIS software (i.e., ArcInfo) support object-based data models. The increasing use of Unified Modeling Language (UML) for visualizing and documenting data-related objects and components may also affect how the agency develops data modeling and documentation standards and procedures. DNR’s data architecture may also be enhanced through data development initiatives in cooperation with the WLIP and other organizations. Finally, technological advances in data collection and development tools are also expected to affect DNR’s data architecture.

Data Documentation: DNR has adopted USGS’s Federal Geographic Data Committee (FGDC) metadata content standards for data documentation. The ATRI strategic initiative proposes expanding these standards to include several DNR-specific elements. The “Data Repository and Metadata” IT Strategic Project also proposes an investigation of standard data modeling tools and techniques based, in part, on research of the data repository and warehousing activities of other state agencies and industry.

Data Access/Storage/Distribution: DOA’s “Web portal” standards will affect how DNR data are accessed via the Internet. DNR’s data architecture may also be influenced by other external governmental activities, such as the implementation of federal and state confidentiality and data access laws, development of the Wisconsin Land Information System (WLIS), and data repository and warehousing recommendations from the “Data Repository and Metadata” IT Strategic Project.

5. Project Management and Review

Review of Oracle logical and physical data models for individual applications is required. However, no enterprise data model exists that identifies agency-wide data entities and the relationships among them. This greatly hinders the ability of programs to manage their projects within the context of an enterprise model. The “Data Repository and Metadata” IT Strategic Project proposes the implementation of a central data repository that would, in turn, require the development of an enterprise conceptual data model. Although data administration activities are included in BEITA’s management and review of projects, they also should be more formally considered in all other DNR data collection, distribution, documentation, database development, and application development activities in DNR.

6. 1998 Goals vs Reality

Progress made toward achieving the **Data Architecture** goals from DNR's 1998 IT Strategic Plan (ITSP) is described below.

- A. E-forms (data collection device) will be fully implemented agency-wide so that data are captured and automatically update the database(s) to which they link for more efficient data capture and entry.

E-forms research and testing will continue in the next biennium. The scope of this project has recently changed to focus on the implementation of E-forms via the Web. DNR is currently piloting the use of Formflow with Oracle as the database (i.e., Oracle replaces DBase III which originally came with the Formflow package). Internet and Intranet security issues have also been major areas of investigation, as have the effects of recent Formflow upgrades.

- B. A central data repository will be implemented in DNR to improve the integration and sharing of data agency-wide, and to expedite responses to Open Records requests. The repository will be used to identify what data DNR has, as well as the custodians of these data.

DNR did not implement a central data repository within the last two years due to lack of funding for the "Data Repository and Metadata" IT Strategic Project. Without a formal data repository infrastructure (e.g., policies, standards, procedures, hardware, software, staffing) in place, DNR continues to rely on the basic repository functions of various existing software packages (e.g., ArcStorm, SDE, and Oracle).

- C. The Intranet will be used in the future to provide easy access to DNR's data and to provide direction and guidance to staff. Use of the Internet will allow the agency to share data with its customers electronically at anytime.

DNR uses the Internet to provide data to its customers, with appropriate security levels set up to allow different customers (e.g., the public, DNR staff, external partners) to access data appropriately. DNR expects that the availability of its data on DNR Web sites will continue to increase, with the Internet and Intranet ultimately becoming the primary modes of data access for all customers. Currently, data from 18 databases are available through the agency's Internet or Intranet Web site, and DNR expects that data from another dozen databases will be available via its sites within the next two years. DNR programs also work to ensure that links to their data exist on the Web sites of partner agencies and organizations, as appropriate.

- D. Develop a forms database and provide all DNR staff with access to this database.

DNR has completed its forms database and associated Intranet application. DNR staff use these to access agency forms and to facilitate the assignment of new form numbers. New or updated forms are added to the database as needed.

- E. Identify “data stewards” for DNR data sets and files.

The identification of DNR data stewards was put “on-hold” because of the BEITA reorganization. Data stewardship and custodianship issues are very closely related, and are currently under consideration by many state agencies, WLIP, and others. DNR programs currently use a variety of informal processes to assign the responsibility and/or accountability for specific data to staff. The “Data Repository and Metadata” and “Land Information Program: Requirements Phase” IT Strategic Projects will attempt to develop more formal procedures for identifying data stewards within DNR.

- F. Identify and document business rules that are related to or affect DNR’s data collection, storage, documentation and/or distribution activities.

Business rules are identified for Oracle and GIS based applications developed for use in DNR. However, the format in which these business rules are documented and described is not consistent throughout the agency. Conceptual data models, which can help programs identify and document their business rules, are also not developed and documented consistently throughout DNR. The “Data Repository and Metadata” IT Strategic Project will provide tools for programs to use for documenting their business rules and the relationships between their rules and data-related activities.

- G. Develop a comprehensive GIS framework to guide DNR’s data collection, integration, documentation, and distribution, as well as the agency’s application development .

The “GIS Framework and Data Collection” IT Strategic Project was identified as a long-term effort to achieve the following goals:

- *Develop DNR’s GIS framework data layers to serve as a foundation for the integration of DNR data.*
- *Geographically enable the extensive agency data holdings in existing tabular databases, with methods for assessing accuracy, reliability and fitness for use.*
- *Develop uniform, agency-wide systems and standards for the future collection of land-related data, and to accommodate local, higher resolution GIS data exchange with partners.*

Although project funding and staff are needed to fully implement this project, progress was made towards several key project goals:

- *Phase I development of the 1:24,000-scale Hydrography data was completed; Phase 2 development is expected to be completed during summer of 2000, with distribution of this key GIS framework data layer to follow.*
- *Phase I development of the 1:24,000-scale DNR-Managed Lands data layer was completed in January of 2000; this encompassed capturing all DNR property records transacted to March of 1996. In Phase II (expected to be completed during FY 2001), a process will be developed to provide a real time link between the Oracle Land Records System and the GIS layer using ESRI’s Spatial Database Engine (SDE). The further intent of Phase II is to maintain the currency of GIS layer as properties are acquired in the future.*

- H. Develop appropriate standards, methods, and quality assurance guidelines for accurate collection of site data.

DNR's locational data standards are currently being updated. Developed in conjunction with the ATRI standards efforts, the draft locational data standards have been under review since July 14, 2000. The document is intended to reconcile table structures, table names, field names, and domains for DNR's locational data. It includes updated and simplified standard location determination method codes, and emphasizes standardized recording of the original data collection characteristics. Guidance documents for specific methods and tools (eg. GPS, address geocoding, on-screen digitizing, PLSS centroid) are planned. The development of standard feature type codes has begun.

- I. Bureaus and programs will be encouraged to relate their stand-alone data initiatives to a larger enterprise data architecture.

DNR has not developed an enterprise conceptual data model. This greatly hinders the ability of stand-alone data initiatives to be related to the agency's enterprise data architecture. However the "Distributed GIS" IT Strategic Project was identified as a long-term effort to achieve the following goals:

- *Distribute GIS capabilities to all agency staff. Make it easier for staff throughout the agency to use the technology to support their program needs.*
- *Provide focused GIS applications to address specific business needs.*
- *Provide a geographic window into agency data holdings - make it possible for all agency staff, with a computer that meets the agency standard, to perform geographic search, retrieval and display of framework data and program databases on their desktop.*
- *Implement high performance GIS data servers and provide desktop client access agency-wide.*

As currently envisioned, this project encompasses two basic strategies for distributing GIS capabilities to DNR staff: 1) by means of Internet Map Server (IMS) interfaces accessed over the worldwide Web, and 2) by means of customized ArcView-based interfaces accessed from the desktop. The ArcView extension developed by ET/GEO to provide DNR staff with improved data access, mapping, and other GIS capabilities is known as "DNRview".

An Internet-based approach is generally considered the more promising long-term strategy for distributed GIS. As a result, since the preparation of the 1998 IT Strategic Plan, attention has focused on the Internet mapping based component, which has come to be known as the "Web Mapping Infrastructure" project (also known as "Project #47"). Consequently, the "Web Mapping Infrastructure" project has become the more visible component of the "Distributed GIS" IT Strategic Project. At the same time, DNRview and other ArcView-based applications continue to be active and important components of distributed GIS at the DNR.

Although project funding and staffing was inadequate to fully implement the "Distributed GIS" IT Strategic Project; progress was made towards several key project goals:

- *An initial distribution of the DNRview extension, together with various DNR geographic data layers structured for use with DNRview, was provided to DNR staff in the Regions and Central Office in FY 99. Efforts during FY 00 have focused on development of*

additional functional capabilities for DNRview; distribution of DNRview version 2, together with digital orthophotos and other new data sets, is expected during summer of 2000.

- *Activities for the Internet mapping component of the “Distributed GIS” IT Strategic Project focused on acquisition of hardware and software for Internet mapping, and on the design, development, testing, and implementation of several initial applications using MapObjects software:*
 - * *Automated Licensing Issuance System (ALIS) Agent Locator*
<http://www.dnr.state.wi.us/org/at/et/geo/alis/>
 - * *Ice Age Trail Viewing Application*
<http://www.dnr.state.wi.us/org/at/et/geo/iceage/>
 - * *Application enabling viewing and download of 1:24,000-scale scanned topographic maps (“Digital Raster Graphics”, or DRGs)*
http://geomap.dnr.state.wi.us/scripts/esrimap.dll?name=drg_web&Cmd=Map
 - * *Landcover Data Viewer*
<http://geomap.dnr.state.wi.us/org/at/et/geo/landcover/mapApp.htm>

7. Goals for 2001 and Beyond

The following **Data Architecture** goals are incorporated in the data-related IT Strategic Projects presented in this plan: Distributed GIS, GIS Framework and Data Collection, ATRI, Data Repository and Metadata, and EMS. Funding and staffing are needed for each of these IT Strategic Projects to begin successfully working toward DNR’s **Data Architecture** goals. Please refer to the individual project descriptions for more information about plans for implementing these goals.

- A. Develop and maintain a distributed, geographic-based decision support system to retrieve, summarize, symbolize and display data based on an area of interest, regardless of which program, bureau, or division originally needed and collected that data:
 - Implement GIS data servers and desktop clients agency-wide, including the deployment of the Spatial Database Engine (SDE) server and addition of GIS framework data, program databases, and links from SDE to agency Oracle databases.
 - Develop and deploy Internet map server (IMS) applications to all desktops through the agency-standard Web browser to provide basic geographic query and display of GIS and related databases.
 - Develop and deploy integrated GIS Web-based applications for subsurface, surface water, land and air media to support broad internal and public use of DNR program data.
 - Develop and deploy customized GIS tools, such as DNRview, to simplify the effective use of DNR data holdings for agency staff with GIS responsibilities.
 - Develop and deploy focused GIS tools and applications with input from program-area specialists to address specific DNR business needs.
- B. Update and integrate DNR’s framework GIS data layers with other enterprise data holdings, to manage and support efficient access to these data, and to implement a methodology for future data collection and data acquisition that will henceforth ensure the highest accuracy and reliability of our natural resources information:
 - Develop and update the DNR’s framework GIS data layers to reflect the most current and detailed representations of the state’s geographical features such as surface water, elevation, landnet (PLSS), infrastructure, soils, and others.

- Facilitate access to tabular databases that possess a spatial component thereby allowing integration of these data with framework GIS layers.
 - Investigate and implement as appropriate recent technological advances in spatial data storage and access methodologies.
 - Identify custodians and secure commitments to on-going custodianship of enterprise data.
 - Ensure that guidance, standards, training and other educational materials are complete and made available to DNR staff in support of field data collection and processing.
 - Develop a methodology to integrate data produced by external partners, such as local units of government, into our enterprise data holdings.
- C. Provide recommendations for developing the necessary infrastructure (e.g., policies, standards, procedures, hardware, software, staffing) to support a central data repository and warehousing functions that successfully meet agency business needs. Begin acquiring and/or implementing the recommended data repository infrastructure and warehousing components.
- Identify internal and external stakeholders,
 - Research data repository and warehousing tools and techniques used by industry and other state agencies (e.g., review Wisconsin Information Resource Council recommendations).
 - Recommend infrastructure components necessary to support a successful central data repository and data warehousing functions in DNR.
 - Improve access to documentation and metadata about DNR's database applications via Internet and Intranet applications.
 - Develop infrastructure policies, standards, procedures, etc. and acquire data repository and warehousing software and hardware.
 - Make data repository documentation, metadata and tools available via the Web.
 - Promote adherence to appropriate data standards, policies, procedures, etc. during database application design, development and implementation.
 - Improve tracking and management of changes to database documentation and metadata.
- D. Lay the groundwork over the next biennium for achieving broader, agency-wide participation in the state agency land information planning process. In addition to improved datasharing and partnership-building, this process will help explore how the activities of the WLIP can assist DNR programs in carrying out their business functions and in meeting customers' needs.
- Identify external stakeholders and internal DNR contacts for land information technology integration.
 - Develop a strategy for broadening internal DNR participation in the state agency land information planning process and in preparing the agency's Integration Plan.
 - Identify ways in which WLIP activities can facilitate the creation of public and private partnerships that benefit the agency, and ultimately, citizens.
 - Identify relationships between data used by DNR programs and data identified as WLIP Foundational Elements.
 - Identify and improve opportunities for DNR programs to share data with other state agencies, county and local governments, and other members of the Wisconsin Land Information community.

- Facilitate and implement consensus regarding the proper role of data custodianship, and identify land information data sets for which the DNR should have custodial responsibilities.
 - Inform DNR staff about the WLIP's role and the agency's Land Information Integration Plan.
- E. Facilitate the coordination of other data-related projects and initiatives with DNR's Data Architecture goals.
- Aquatic and Terrestrial Resource Inventory (ATRI).
 - Surface Water Integration System (SWIS).
 - Wisconsin Waters Initiative.
 - Environmental Management System (EMS).

Technology Architecture

Technology architecture is the hardware/software infrastructure, standards and guidelines that guide the design of IT systems for the purpose of eventual integration.

1. Vision Statement

The DNR's technology architecture provides the foundation on which our application and data architectures are built. It provides the infrastructure to support both our internal computing needs and extends information technology to our external partners and customers via the Internet. It will support E-Government requirements and the agency's desire to make spatial data accessible to staff, our partners and customers.

2. Technology Portfolio

Server Environment: The Agency operates a central Digital ALPHA cluster that is maintained by the Bureau of Enterprise Information, Technology and Application (BEITA). This cluster consists of both OpenVMS and Tru64 Unix operating systems. BEITA also supports Geographical Information Services with Windows NT workstations connected to Digital ALPHA Servers running Tru64 UNIX. In addition we have implemented Windows Terminal Server to support GIS needs for the SWIS project.

The Agency's servers are attached to a fiber optic backbone. BEITA supports Fast Ethernet (100Mb/s), FDDI running over copper (category 5) and fiber. TCP/IP is the supported network protocol. TCP/IP stacks are Process Software's TCPWARE product that runs under VMS, Microsoft's NT TCP/IP stack and the TCP/IP stack, which is native to Tru64 Unix. Central office Network Operating System (NOS) is Windows NT version 4. BEITA supports approximately 3700 PCs with Windows NT workstation version 4 operating systems. Plans are underway to look at Windows 2000.

The Agency has 53 networked remote locations throughout the State of Wisconsin. Badgernet supports connectivity to the Remote locations. All Badgernet locations have Cisco routers that support T1 circuits. The Local Area Networks (LAN) deployed at these sites are 10BaseT Ethernet LANs with CISCO switching technology and category 5 cabling. LAN servers are Intel based Windows NT servers. Digital Alphaserver models 1000a, 400s, and 300s are deployed at 23 locations all running NT Server version 4. These servers will be phased out and replaced with Intel based servers as well. The NOS is Microsoft's NT server running LANmanager version 3. The majority of the 23 locations are running dual servers consisting of primary and secondary NT domain controllers.

The Agency uses the NT security model called the Single Master Domain. In the Single Master Domain model, there is one Master Domain and many Resource Domains. All user accounts reside in the Master Domain. All remote locations deployed with a Microsoft NT Server are provided with a Master Domain Backup Domain Control (BDC).

WINS/DHCP servers are also deployed at all NT Server locations (i.e. Central office, Regional Headquarters and Service Centers offices -- 23 offices). Static IP addressing is an exception at these locations. There is a statewide initiative to implement Windows 2000 server and the Active Directory component of this product. This initiative will undoubtedly impact our WINS/DHCP implementation.

MS Exchange has been deployed to 53 locations with an Exchange Bridgehead deployed in each region. Exchange is being propagated with the installation of NT workstation and we have approximately 3600 Exchange users. Microsoft Schedule+ is the standard calendaring software.

Database Environment: BEITA has 8 instances of Oracle. These instances are distributed across a number of servers. Following is a summary chart of our database instances:

Common Name	Version	Primary Function(s)
Dnr_test1	7.3.4	Test Environment for Transaction processing
Dnr_prod2	7.3.3.4	Production Environment for Transaction Processing
Dnr_wlf1	7.3.4	Production Environment for Web/Warehouse Applications
Dnr_wrhs1	7.3.4	Test Environment for Web/Warehouse Applications
DNR_SDE	8.1.5	Production Environment for Spatial Data Engine
DNR_AIR1	7.3.4	Production Server for the Wisards Application
ORAFLEET	7.3.4	Database for the Fleet Anywhere Application, this Server's function may change in the future
(Oraweb)	7.3.4	For use with Internet applications.

GIS data libraries in ArcStorm and SDE are served by a Digital Alpha 2100. A Digital Alpha 1200 serves digital aerial photographs (orthophotos) and other scanned map data.

Internet Environment: BEITA maintains a presence on the Internet via a Microsoft Windows NT server running Microsoft's Internet Information Server software for WWW and read only anonymous FTP access. A separate server with similar software is maintained on the Agency's internal network for access by Agency staff only. A Cisco PIXS firewall is the primary security against Internet access and attacks to the Agency Intranet. DNR uses Microsoft Windows NT servers running ESRI's Internet Map Server software, and is connected to the Internet server. In addition, Oracle Application Server (OAS) is running on several servers. Inside the firewall, this includes DNR_WLF and Oracl2. Outside the firewall OAS is running on an Intel, Windows NT Server.

Desktop Environment: The standard desktop is a Pentium PC with NT workstation version 4 operating systems and a standard software suite. The suite includes SMARterm Office, PC Duo, PKZip/WINZIP, Internet Explorer 5.0, MS Exchange, MS Schedule +, MS Office Pro 97, Developer 2000 Run Time, SMS and Sweep. There are plans to migrate to both Windows 2000 and Office 2000 in the future. Currently desktop devices are on a four year replacement cycle, per the statewide enterprise standard. DNR currently supports approximately 3700 devices.

3. Development/Support and Staffing

The Agency is currently migrating from Oracle 7.3.4 to Oracle 8i. This migration is a significant workload for the technical support staff, but should not have significant impact on existing systems. Oracle 8i should provide better connectivity to the Internet.

The Agency is also migrating away from the OpenVMS operating system and replacing it with Tru64 Unix from Compaq. Software support for OpenVMS is vanishing, thereby necessitating this migration. Tru64 Unix is vendor-supported and operates on many of our existing servers. This migration is timed to minimize cost and coordinates well with server upgrades. This project does have broad reaching impacts on both BEITA and many Bureaus and Programs within the Agency, and is scheduled for completion by the end of FY 02.

A pilot project and full implementation is planned to move the Agency's Intel-based servers from Windows NT Server version 4 to Windows 2000 Advanced Server. At the same time, we hope to implement Active Directory which is part of the Windows 2000 environment. This coincides with a statewide enterprise initiative.

There are plans to migrate our desktops from Windows NT Workstation, ver 4 to Windows 2000 workstation. We also anticipate a migration to Office 2000 on the Desktop. This work is anticipated to coincide with a statewide enterprise initiative.

The DNR is testing the use of Windows Terminal Server to improve performance to several spatially enhanced applications. The Statewide Water Integration System is the most prominent application that uses this technology. The department is also exploring the possibility of using Outlook Web Assistant (OWA) as well as a Virtual Private Network (VPN) solution to reduce the cost of dial facilities to support our field staff.

There are a number of projects proposed in the budget process to support the Internet, E-Gov, Environmental Management System (EMS) and GIS application and data environments, as well as continuing to support the infrastructure which is already in place in the Department.

Adequate staffing to support these initiatives is a concern in delivering the desired services and support. While several FTEs have been requested, we have concerns that there may not be sufficient staff for implementation and support. To meet the stated goals, the Agency will explore the use of Application Service Providers (ASPs) and the hiring of contract staff to backfill shortfalls in staffing as resources permit.

4. External Influences

Changing technology mandates that the DNR continually reassess its IT environment to determine the correct path for upgrades and hardware/software replacement. Upgrades, migrations and replacements are required to keep us compliant with vendors' support agreements; to facilitate cooperation and partnering with external partners; and to meet the needs of the DNR's internal and external customers. Changes tend to have a ripple effect in information technology. Frequently a software upgrade will mean an operating system upgrade, a new server upgrade, and it may affect other systems that are integrated. We frequently find similar paths in choosing server upgrades. Extensive planning and negotiation with vendors is often required.

In the next biennium we will face a minimum of one significant database version upgrade across all platforms, as well as numerous software patches which will need to be applied to address bugs in software. We can anticipate the need to obtain additional hardware and software to meet the continued demand for IT resources. We will need to continue planning for each consecutive wave of changes to IT.

5. Project Management and Review

As the complexity of our IT systems increase, the Agency's need for formal planning and project management also increases. In response to this need, the Agency instituted a Project Management methodology and discipline to guide its IT work efforts. BEITA tasks involving risk have been segmented into separate projects, and a project manager was hired to assist in managing the dependencies and communications required among projects. A System Service Request Process has been implemented to identify projects arising outside of the regular work planning process. It is anticipated that work in this area will continue to be formalized and improved over the next biennium.

6. 1998 Goals vs Reality

- Review gigabit technology for the network and develop plan in FY 99 for switching to it if it looks feasible. Gigabit technology is currently being deployed in the data center.
- Phase out Cabletron equipment with CISCO switching. This work has been completed in GEF 2 and will be completed in FY 02 in the regions.
- All LAN servers converted to NT. This work has been completed.
- Full implementation of BadgerNet. This work has been completed.
- Upgraded enterprise mainframe following evaluation of strategic direction. A decision to move to Tru64 Unix has been made and a project is underway to make this happen. Estimated completion is during FY 02.
- DECnet replaced by TCP/IP. This has been completed.
- Continued efforts towards implementation of GIS environment including an upgrade of ESRI's SDE product, and ArcInfo 8.
- Address issues of computer dating for the year 2000. Project completed successfully with little or no interruption to service.

7. Goals for 2001 and Beyond

The Agency's ability to implement projects and activities that achieve these goals is dependent upon available funding and resources.

- Continue efforts to develop an environment that supports the delivery of services to our Partners and customers via the Internet.
- Define, build and maintain an Information Technology infrastructure, which will enable E-Gov.
- Continue to enhance and maintain the environment for agency wide use of GIS.
- Develop and implement a project plan for deploying Office 2000 within the DNR.
- Develop and implement a project plan for deploying Window 2000 desktop within the DNR.
- Develop and implement agency wide security policies, procedures and best practices.
- Continue and complete project to move enterprise mainframes to Tru64 Unix during FY 02.
- All LAN servers converted to NT servers in the Wide Area Network in FY 01.
- Messaging only through MS Exchange with full messaging from the Web using Microsoft's Outlook Web Access (OWA).
- State wide global directory for Business partners. In the future extended to all external entities. In addition, a migration to a NOS global directory (Microsoft Active Directory) is also planned.
- ExtraNet and electronic commerce supported for both purchasing (license sales) and data exchange.
- Maintain concurrency with Oracle's strategic direction.

- Provide adequate performance serving large GIS data sets and digital map data to the standard desktop.
- Provide adequate performance when linking GIS data with Oracle data tables from the standard desktop.
- Upgrade Regional headquarters and Service Center infrastructure to Cisco Catalyst Switching technology.
- Review and plan for the migration to Windows 2000 Advance Server and Active Directory.
- Implement Multi-tiered application server architecture.
- Plan and implement Virtual Private Networking (VPN) for DNR Field offices, Parks, mobile users, and telecommuting.
- Wireless technologies need to be reviewed and planned for, including addressing security issues surrounding the use of wireless devices.
- Pursuit of a Virtual Office to support work at home and at sites is desirable and is supported by a number of the previous goals.
- There is a need to implement technologies that assist in managing capacity and performance to assist in determining the life of a device in a particular role, and how are needs are changing over time. This need becomes more imperative as we move to E-Gov solutions.

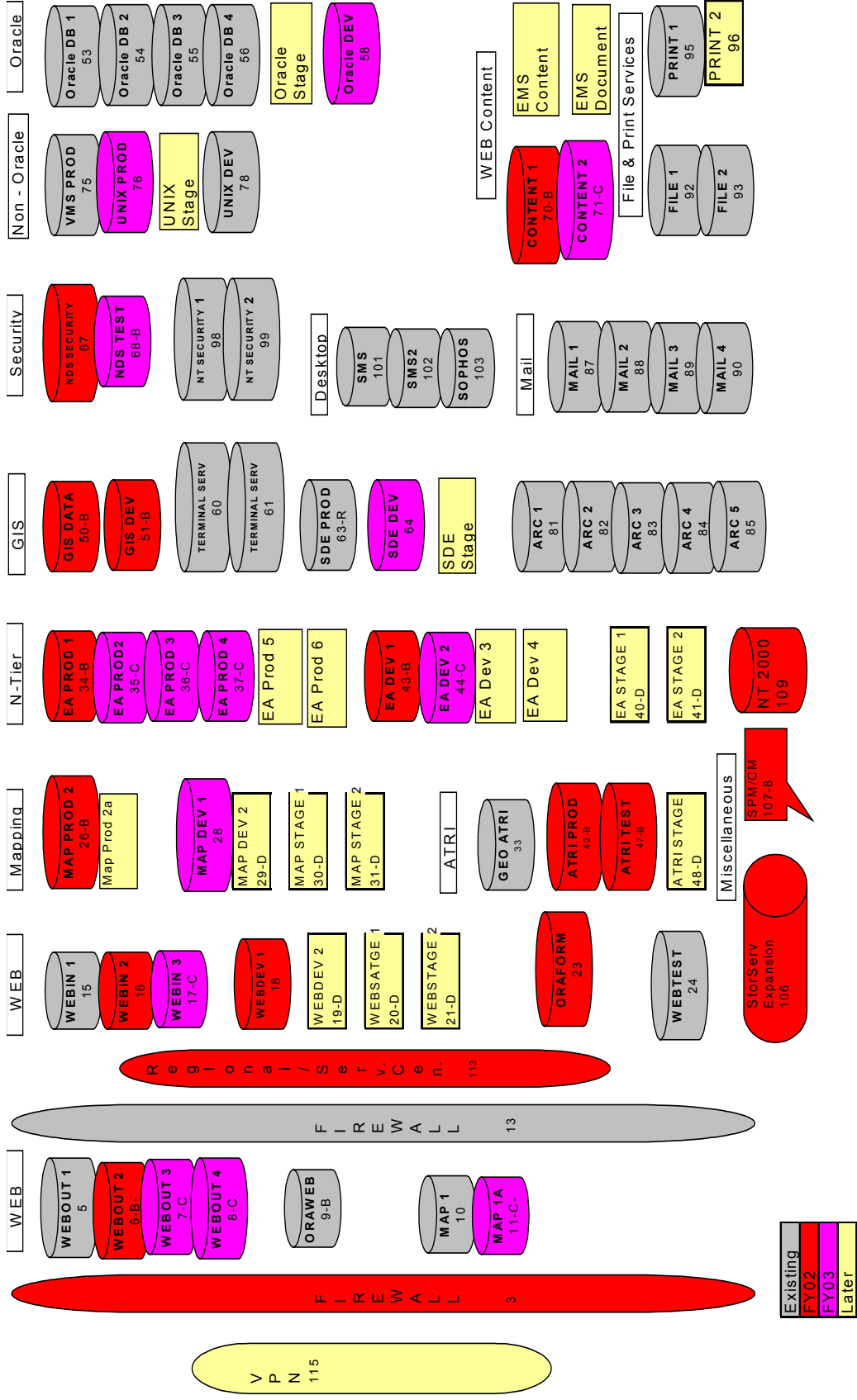


Diagram of Agency server environment, present and planned (diagram is best viewed in color).

Organizational Architecture

1. Vision

Department of Natural Resources staff throughout the state possess the leadership and assume the responsibility to assure the appropriate levels of computing infrastructure, desktop PCs, funding, training, support, teams and administrative sponsorship to effectively take advantage of information technology to meet their business needs.

2. DNR Institutionalizes Enterprise Approach

From its inception, information technology at the DNR has been participatory in nature. IT classified staff historically have worked closely with the department's programs in support of their business goals. With added emphasis placed on program integration, project management and on-line services, it is imperative to integrate IT resources across programs.

Funding constraints, in the face of growing demands for IT services, presented department administrators with the need to share ownership of IT resources, and in turn, share in IT-related decision making. In response to this challenge, a *Chief Information Officer* (CIO) position and a group of business experts versed in IT--referred to as the *BIZWIZ Team* were established. As customer-focused outcomes of the IT Reengineering Project, the CIO and BizWiz were charged with aligning IT with the agency's business needs and identifying needed resources.

Customer-driven needs resulted in changing the roles of the department's *Data Coordinators* and regional IT staff or *RIMS*. These teams comprise an essential part of the department's IT structure. Data coordinators perform as liaisons between their subprograms and the Bureau of Enterprise Information, Technology and Application (BEITA). They have long facilitated two-way communications regarding IT policies, procedures and products. Today, they play a pivotal role as change agents in assuring the success of the reengineered IT processes in support of their programs' business needs.

BEITA staff in the five regions provide onsite support to the subprogram staffs located statewide. The role of the RIMS is evolving in response to IT reengineering. These highly skilled IT professionals also act as change agents by providing additional software and applications support to regional employees. As the program bureaus assume greater responsibility for fulfilling their field staffs' IT needs, increased coordination among data coordinators and RIMS will occur.

3. BEITA's Reorganization

BEITA reorganization was the direct outcome of the IT Reengineering Project that focused on improving customer service, data access, and data integration. The following set of guidelines helped to direct this reorganization:

- Support Strategic IT Plan themes.
- Support the new DNR organization.
- Focus on customer service and satisfaction.
- Focus on quality process management and continuous improvement.
- Provide training and customer support.
- Include relationship management concept.
- Support enterprisewide development.

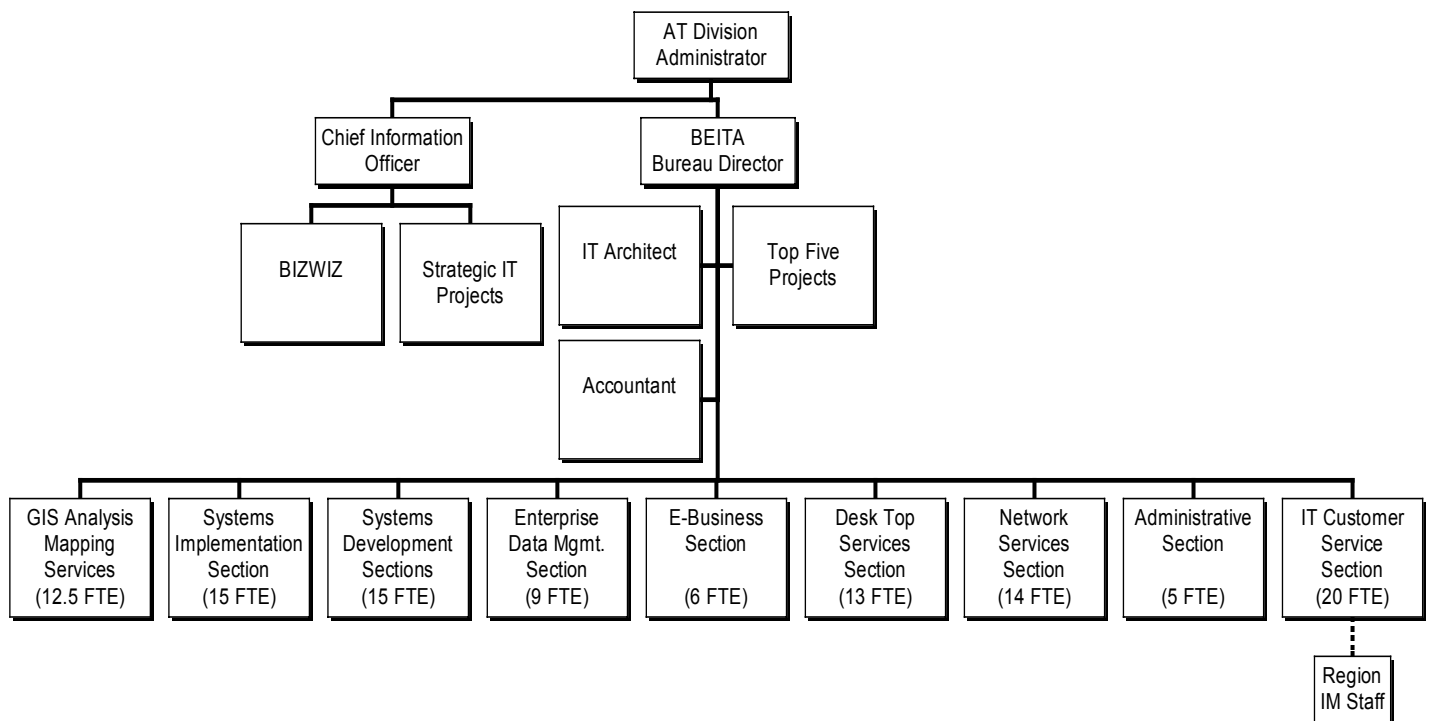
With these guidelines as its foundation, BEITA now consists of the following sections--each assigned the lead for specific reengineered processes--and two new management positions:

- Administrative Section.
- Desktop Services Section.
- E-Business Section.
- Enterprise Data Section.
- GIS Analysis and Mapping Services Section.
- IT Customer Service Section.
- Network Services Section.
- Systems Development Section.
- Systems Implementation Section.
- IT Accountant.
- IT Architect.

4. IT Team Work

Teamwork always has and always will provide the department a key method for assuring that IT tools and services adequately support the agency's business functions. IT team structures are either formal, informal, standing or ad hoc. Standing teams are formed across BEITA sections,

**Bureau of Enterprise Information Technology and Application
Organization Chart**



across bureaus, and include regional customers and external partners.

Implementation of BEITA reorganization is ongoing, and team members will be identified and charters developed during the next 18 months. These efforts may result in the restructuring of certain teams, to assure their effectiveness.

5. Evaluation and Measures of Success

BEITA will use the following benchmarks to evaluate the progress and effectiveness of its reorganization. In addition, the Division of Administration and Technology will conduct an annual review to evaluate BEITA's progress towards fulfilling the agency's goals to improve customer service and increased efficiency.

Measuring Accomplishments

To evaluate the effectiveness of BEITA's reorganization, benchmarks and performance measures will be established at each of the required reporting points:

- IT Strategic Plan.
- Department's Strategic Business Plan.
- Department's Workplan.
- BEITA's Operational Workplan.
- Employee Annual Performance Reviews and Objective Setting.

The following strategies will be used to determine customer satisfaction with IT services:

- Conduct annual follow-up surveys to determine user satisfaction with desktop services, GIS/Applications mapping services, data management, systems development and implementation.
- Establish Service Level Agreements that contain specific performance measures and milestones.

Customer Service Assessment

Because BEITA reorganization requires process reengineering, achieved efficiencies and effectiveness will largely measure success. Key questions to be answered:

- Has the bureau established an institutional mechanism for identifying customer needs and measuring customer satisfaction.
- How effective is the measurement system at identifying problems, establishing performance improvement targets and indicating success at meeting performance goals?
- How has team management of applications and GIS functions increased management flexibility?
- What efficiencies are achieved by new technologies?
- Have communication and consistency been improved within the bureau and with/amongst the regions?
- How do we assure that front-line customer service staff are aware of our bureau's services?

6. Future State of IT at DNR

Based upon customer feedback, BEITA will conduct continuous quality improvement and implement service level agreements. As BEITA's Organizational Architecture evolves in support of reengineered IT processes and reorganization objectives, the bureau's organization will be "tweaked" as needed. It is expected also that certain external forces will impact this architecture. BEITA work-planning will provide key opportunities to reassess priorities and staffing levels in response to changes in Agency's IT needs or circumstances.

The department's most valuable IT resource is the staff who make the Application, Technology and Data Architectures work. As we've seen over the past two biennia, it has become difficult to compete with the private sector when hiring and retaining IT staff. Trends indicate that this competition will continue until the State reaches parity with the private sector.

Another potential obstacle the department faces is providing consistent IT expertise to meet growing program demands. Our inability to obtain permanent positions through the biennial budget process has forced more outsourcing. Use of contractors paid for by user programs is a current practice that will continue and, likely, increase.

Appendix D

IT Strategic Projects

Distributed GIS

1. Project Description

GIS is a powerful tool that integrates disparate data and supports the analysis and mapping needs of the Agency. However, limited progress has been made towards distributing GIS capabilities to all Agency staff, and the infrastructure needed to accomplish this has not been adequately supported. To maximize the utility of this technology, GIS framework data, program data, and Agency Oracle databases must be accessible to all Agency staff, partners and customers. In the absence of an Agency-wide ability to distribute and support GIS, attempts to provide all staff with this technology are sporadic and inefficient.

This project provides the infrastructure and support needed to deliver GIS technology to Agency staff, partners, and customers. Agency managers and land stewards would have access to GIS to assist in the planning, implementation and evaluation of their land programs. GIS would also be available to support decision making and involve partners and customers in this process. Agency staff would be better positioned to share GIS data and applications with partners and customers to achieve greater efficiency and support a broad range of Agency business needs.

2. Project Mission

- Distribute GIS capabilities to all agency staff. Enable staff throughout the agency to use this technology to support their program needs.
- Implement GIS data servers and desktop clients agency-wide, including the deployment of the Spatial Database Engine (SDE) server and addition of GIS framework data, program databases, and links from SDE to agency Oracle databases.
- Develop and implement standards for presenting DNR geographic and program data over the Internet.
- Develop and deploy customized GIS tools (e.g., DNRview) to simplify the effective use of DNR data holdings by Agency staff.
- Provide Agency staff, partners and customers with Internet access to GIS queries and displays.
- Provide GIS support to partners and customers to facilitate data and application sharing.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

This project supports the Agency's Technical Requirements to establish GIS as an agency and public asset; fully support the Internet as a tool for information exchange; and develop applications and required infrastructures to integrate appropriate data for staff and customers. This project is strongly aligned with all of the Agency's goals: making people our strength, sustaining ecosystems, protecting public health and safety, and providing outdoor recreation.

4. Project Timetable

Planned Start Date	Continuing
Length of Project	About 3 years
Milestones: Deploy DNRview v.2 Develop ArcIMS application development framework Expand SDE connectivity for Web mapping Serve air photos Develop standards for Web mapping Develop integrated Web-based apps for subsurface, surface water, land and air media Incorporate user authentication system Incorporate new data models	Date: October, 2000 March, 2001 April, 2001 May, 2001 October, 2001 June, 2002 June, 2002 October, 2002
Expected Life	Indefinite (infrastructure must keep evolving)

5. Technical features

- A key risk factor affecting this project is the extremely limited availability of technical expertise in Internet application development. Due to the scarcity of this resource, funding is needed to contract with external consultants for this expertise. Over time, DNR staff will need to be trained to make effective use of the Web mapping infrastructure.
- A key challenge will be overcoming the technical obstacles to providing real-time Internet/Intranet access to the agency's large spatial and tabular data holdings. This effort will involve research and development in new and dynamic technologies, and represents true project work.
- The achievement of a strategic, agency-wide approach to Distributed GIS (as opposed to a program-by-program approach) will require a substantial amount of time for planning and coordination.

The Agency's '01-'03 biennial budget includes budget initiative DIN 5271 (Remediation and Redevelopment Goespatial Information) that is dependent upon Distributed GIS, but does not impact Distributed GIS directly.

6. Project Costs and Benefits

Project Costs for the 1-2 year time frame:

Item	FY 02	FY 03	Total
HW	\$20,000	\$10,000	\$30,000
SW	\$10,000	\$5,000	\$15,000
Contractor	\$140,000	\$140,000	\$280,000
Services	\$10,000	\$10,000	\$20,000
Training	\$10,000	\$10,000	\$20,000
Staffing	\$10,000	\$10,000	\$20,000
Total	\$200,000	\$185,000	\$385,000

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change			
Savings		\$100,000	10,000
Avoided Costs	\$50,000	\$400,000	\$450,000

Intangible benefits:

- * Increased staff productivity
- * Reduced cycle time and effort to answer inquiries
- * Agency, partner, and customer cost avoidance and savings
- * Problem prevention
- * Improved communication
- * Better use of existing resources

7. Associated Risks and Project Dependencies

Risks associated with not carrying out the Distributed GIS project include:

- Failure to meet the expectation on the part of agency staff and the public for real-time Intranet/Internet access to DNR geographic and tabular data.
- Perpetuation of the current program-by-program approach to Web mapping rather than an agency-wide approach in which a fully integrated technological infrastructure provides consistent Web mapping support for all DNR programs.
- Lack of timely access to data needed to support informed decision-making on the part of DNR programs, partners, and customers.
- Agency liability due to the inappropriate presentation of data over the Internet (in the absence of agency-wide standards for data quality and Web mapping).

This project has interdependencies with the E-Government project.

Projects/activities that are dependent (in part) upon the outcome of this project include:

- Framework GIS and Data Collection.
- Aquatic and Terrestrial Resources Inventory (ATRI).

Project author: John Laedlein

Project leader: John Laedlein

Executive sponsor: None (to be determined)

Region GIS

1. Project Description

GIS and related technologies are key to integrating and analyzing both spatial and tabular data, and supporting resource planning and management. Regional staff recognize the value of this utility and want to use GIS for resource management and for communicating land-based issues to Agency partners. The current demand by regional staff and partners for GIS cannot be met because the Agency lacks staff support, necessary hardware and production resources. The demand for GIS will continue to increase because the technology is recognized as an essential tool for planning, implementing and evaluating resource management activities.

This project provides support, equipment and incentives for regional staff to integrate GIS into their daily management activities.

2. Project Mission

To meet the demand for GIS products, the Department has invested heavily in development of base layers and integrated applications using GIS. We now need to successfully deploy these applications and implement an infrastructure, which supports GIS use in the regions.

Investing in this project will promote:

Organization and Human Resources

- Implement a process where GIS activities are communicated and shared with regional staff.
- Provide general GIS training for regional staff at an affordable cost.
- Establish a permanent support program for GIS users in the regions.
- Educate managers and train staff on the effective uses of GIS technology.
- Provide a central point of contact for regional coordinators to ensure statewide consistency.
- Establish a funding mechanism that supports shared office equipment for GIS hardware and software, e.g. workstations, plotters, color printers.

Application Development

- Promote and support GIS use and data sharing with partners and other local governmental units.
- Enhance RegView to meet the needs of GIS users in the regions, and provide consistent base tools for GIS use.
- Provide application development assistance for regional GIS initiatives.

3. Project Alignment to Business Objective, Technical Requirements, Architectures, or External Influences

The fundamental goal of the Region GIS project is to implement an organization and technical infrastructure that supports region staff and their partners in using GIS. This project aligns with all of the Agency's business goals: Making People Our Strength, Sustaining Ecosystems, Protecting Public Health and Safety, and Providing Outdoor Recreation. GIS applications and products (maps) are invaluable in communicating issues with our customers, and provide Agency staff with the tools integrate disparate data and conduct complex analysis to guide and support management decisions. It also supports the Agency's Technical Requirement to establish GIS as an Agency and public asset, integrated with tabular data, accessible from remote locations, becoming the basis for organizing and using geographic information.

4. Project Timetable

Start Date:	Continuing
Length of Project:	4 years
Milestones: Affordable GIS training scheduled. Regional staff have local access to GIS workstation, software, color printer, and plotter. Region GIS projects identified and funded. Support infrastructure in place.	August 2001 December 2001 March 2002 September 2002
Expected Life	Ongoing

5. Technical features

The Department's Technical Architecture planning for servers located in the regions needs to include local GIS development storage needs. Currently, older servers have insufficient space to store DNRView, digital orthophotos, and/or digital raster graphics. Existing line speeds support limited access to remote GIS layers and applications.

6. Project Costs and Benefits

Projected Costs:

Item	FY 02	FY 03
HW	\$60,000	\$40,000
SW	\$25,000	\$25,000
Application Development Services	\$50,000	\$50,000
Training	\$40,000	\$40,000
FTE (6)		\$300,000
Total	\$175,000	\$455,000

Projected Benefits:

Item	FY 02	FY 03
Revenue Change		
Savings	\$ 100,000	\$ 100,000
Avoided Costs	\$ 50,000	\$ 50,000

Cost savings reflect our current investment in LTEs for region GIS work, because permanent staff can't afford training and have limited product support. Avoided costs are based on efficiencies achieved through trained and experienced technical staff.

Other intangible benefits include:

- * Improved cross-program communication and coordination on GIS activities
- * Integrated systems management
- * Data-based decision-making and ecosystem management
- * Improved customer service (A picture is worth a thousand words.)

- * Improved consistency through cross-program application development
- * Greater sharing of applications
- * Supports partnerships
- * More efficient use of people resources
- * Satisfies demand for GIS support by GMU leaders
- * Better support of the tools currently in use

Expected Life of the developed application of product: Ongoing

Project author: Beth Holl

Project Leader:

Executive Sponsor:

GIS Framework and Data Collection

1. Project Description

The Agency's custodial oversight of Wisconsin's natural resources requires that Agency staff use current, comprehensive, and accurate information to manage and protect the State's land, water and air resources. GIS technology provides many of the tools used today for integrating disparate data, analyzing these data, and producing maps. GIS applications are built on a collection of data layers and links to tabular data. The architecture of these data layers is critical to the success of GIS, and thus becomes a framework for GIS activities that follow. This project addresses that critical framework and the need to update and integrate the Agency's GIS data with other enterprise data. In doing so, this project puts in place processes to manage and support efficient access of data, and implements methods and policies for data collection and acquisition that will ensure the highest accuracy and reliability of these enterprise data.

2. Project Mission

- Develop and update the DNR's framework GIS data layers to reflect the most current and detailed representations of the state's geographical features such as surface water, elevation, landnet (PLSS), infrastructure, soils, and public land ownership.
- Facilitate access to tabular databases, and where possible, integrate with spatial data.
- Investigate new technologies and implement those that are appropriate for Agency use in storing and accessing spatial data.
- Identify custodianship of enterprise data.
- Ensure that guidance, standards, training and other educational materials are complete and made available to DNR staff to support data collection and processing.
- Develop a methods to integrate data produced by external partners with Agency enterprise data.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

This project addresses nearly all of the Agency's Technical Requirements by establishing GIS as a public asset, integrating spatial and tabular data, improving access of GIS data, and providing guidance and training that delivers GIS technology to Agency staff and the public, while improving the mechanisms by which GIS data are collected and managed. Most of this work goes towards improving the Agency's Data Architecture, and working with external partners to establish policies and processes for data sharing and improving efficiencies (Organization Architecture). This project also addresses data standards and policies that are anticipated from the work initiated by the Wisconsin Land Information Program (WLIP).

4. Project Timetable

Planned Start Date	7/1/2001
Length of Project	About 5 years
Milestones: Complete field data collection guidance Implement external partner data sharing Complete framework data layers Spatially enable tabular databases Implement GIS data model	Date: 7/1/2002 7/1/2002 7/1/2003 7/1/2005 7/1/2006
Expected Life	Indefinite (data and technology will keep evolving)

5. Technical features

Research and development is needed before the Agency can apply new models and functionality of data objects, now available in recent upgrades to GIS software (ArcInfo, ArcView, ArcIMS, and ArcSDE). We must also formalize our relationships and processes with external partners to facilitate data development and sharing, and promote efficiencies. Developing and maintaining standards and guidance for data collection will improve data quality and promote awareness of emerging technologies and their appropriate use

6. Project Costs and Benefits

Item	FY 02	FY 03	Total
HW	\$20,000	\$20,000	\$40,000
SW	\$10,000	\$10,000	\$20,000
Contractor	\$100,000	\$100,000	\$200,000
Services	\$20,000	\$20,000	\$40,000
Training	\$20,000	\$20,000	\$40,000
Staffing	\$40,000	\$40,000	\$80,000
Total	\$210,000	\$210,000	\$420,000

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change			
Savings	\$150,000	\$200,000	\$350,000
Avoided Costs	\$150,000	\$200,000	\$350,000

This project addresses the enterprise-level data integration that will modernize our spatial data and provide for seamless access across the spatial and tabular data domains. This will facilitate ecosystem-based decision-making and integrated planning, and will support improvements to data access for agency staff and the public. Additional benefits of the project are listed below.

- * Framework GIS data that are current, comprehensive and accurate.
- * Spatial and tabular data that are integrated.
- * Efficient and reliable access to enterprise data.
- * Improved field data collection.

- * Improved ability to exchange data with external partners.
- * More sound and defensible decision-making.
- * More effective use of data.
- * Cost savings from more efficient staff.
- * Higher quality data available for sharing with external customers.

7. The risks of not doing this project are that the above-stated benefits will not be realized.

This project has a direct influence on the successes of ATRI and SWIS as well as the daily activities and responsibilities of numerous DNR staff.

Related Strategic IT Initiatives include “Distributed GIS”, “Data Architecture”, “Land Information Program, Requirements Phase”, and “Data Repository and Metadata”.

Project author: Lance Perry

Project leader: Lance Perry

Executive sponsor: TBD

Land Information Program, Requirements Phase

1. Project Description

The Wisconsin Land Information Program (WLIP) represents a coordinated effort on the part of state and local government agencies together with educational and private organizations, to develop geographic and land information technology and data. The WLIP envisions that land information becomes a shared and integrated resource that is collected and maintained at the state and local level, and is used by all levels of government and the private sector. The WLIP is regarded as a national model of technical innovation and intergovernmental cooperation.

Wisconsin Statutes Section 16.967(6) requires eleven designated State agencies (including the DNR) “shall submit to the Board a plan to integrate land information to enable such information to be readily translatable, retrievable and geographically referenced for use by any state, local governmental unit or public utility.” The DNR has prepared and submitted a biennial Land Information Integration Plan since 1994. These plans are reviewed by the Department of Administration, published on the Internet, and reviewed as part of the budget process. The Agency’s Integration Plan references and supports the DNR IT Strategic Plan.

Historically, the DNR Land Information Integration Plan has been prepared predominantly by staff in the Bureau of Enterprise Information, Technology and Application. Broader program involvement is needed in the DNR’s land information planning process. The Agency also needs to recognize and address the expectation that Agency data will be compatible with the Wisconsin Land Information System (WLIS).

2. Project Mission

The goal of this project is to lay the groundwork over the next biennium for achieving broader, Agency-wide participation in the state agency land information planning process. In addition to improved data-sharing and partnership-building, this process will help explore how activities of the WLIP can assist DNR programs in performing business functions and meeting customers’ needs. Tasks include:

- Identify external stakeholders and internal DNR contacts for land information technology integration.
- Develop a strategy for broadening internal DNR participation in the state agency land information planning process and in preparing the agency’s Integration Plan.
- Identify ways in which WLIP activities can facilitate the creation of public and private partnerships that benefit the agency, and ultimately, citizens.
- Identify relationships between data used by DNR programs and data identified by WLIP as Foundational Elements.
- Identify and improve opportunities for DNR programs to share data with other state agencies, county and local governments, and other members of the Wisconsin Land Information community.
- Facilitate and implement consensus regarding the proper role of data custodianship, and identify land information data sets for which the DNR should have custodial responsibilities.
- Inform DNR staff about the WLIP’s role and the agency’s Land Information Integration Plan.

Appendix D IT Strategic Projects

Land Information Program, Requirements Phase

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

The WLIP Requirements Phase project is consistent with the strategic theme that seeks to establish a mechanism to identify, fund, develop, implement and manage enterprise-wide integrated technology, data and applications that are agency driven and reinforce performance measurements. This project also represents a major opportunity to build external partnerships through broader DNR involvement with the WLIP.

4. Project Timetable

Planned Start Date	Continuing
Length of Project	2 years
<i>Milestones:</i> Identify external stakeholders and internal contacts for tech. integration Develop, implement process to broaden DNR involvement in WLIP Identify DNR data which correlate with WLIP Foundational Elements Achieve consensus on roles of DNR data custodians Prepare Integration Plan for 2003-2004	<i>Date:</i> March, 2001 June, 2001 October, 2001 December, 2001 June, 2002
Expected Life	Indefinite (participation In WLIP will be ongoing)

5. Technical features

The risk factors facing this project are predominantly organizational rather than technical.

External factors that could influence the outcome of this project include new requirements or initiatives on the part of the Wisconsin Land Information Board (WLIB) or the Wisconsin Land Council (WLC) affecting DNR programs. Although broader DNR participation in WLIP activities is necessary, it also carries with it the risk of increased expectations and demands on agency land information resources. Another potential external factor for this project is the effect of a legislative “sunset” provision that would end funding for the WLIP in 2003.

Appendix D IT Strategic Projects

Land Information Program, Requirements Phase

6. Project Costs and Benefits

Project Costs for the 1-2 year time frame:

Item	FY 02	FY 03	Total
HW			
SW			
Contractor	\$100,000	\$100,000	\$200,000
Services	\$10,000	\$10,000	\$20,000
Training	\$5,000	\$5,000	\$10,000
Staffing	\$50,000	\$50,000	\$100,000
Total	\$165,000	\$165,000	\$330,000

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change			
Savings	10,000	\$200,000	\$210,000
Avoided Costs	\$10,000	\$200,000	\$210,000

Intangible benefits:

- * Agency, partner, and customer cost avoidance and savings.
- * Improved land use decisions.
- * Savings through cooperative data development and update.
- * Improved communication between DNR programs and external stakeholders .
- * More efficient use of existing land information technology and data.
- * More accessible, useable, complete, accurate and timely information available to local units of government, public utilities and the public.
- * Improved analysis, decision support, and administration.

7. Associated Risks and Project Dependencies

Risks associated with not carrying out the WLIP Requirements Phase project include:

- Failure to meet the expectation on the part of state and local governments, and other members of the Wisconsin Land Information community, that DNR data will be compatible with the WLIP.
- Loss of opportunities for data sharing and the building of public and private partnerships.
- Inadequate representation of the business needs of DNR programs in the agency's biennial Land Information Integration Plan

Projects/activities that may be considered interdependent with this project include:

- Framework GIS and Data Collection project.
- Data Repository and Metadata.

Project author: John Laedlein

Project leader: None (to be determined)

Executive sponsor: None (to be determined)

Aquatic and Terrestrial Resource Inventory (ATRI)

1. Project Description

ATRI is a public and private partnership to gather, link, and make available data used for making key natural resources management decisions. The ATRI information system is a critical component of the overall project and has 3 phases:

- 1) Planning and Assessment.
- 2) Data/Application Infrastructure Development.
- 3) User Application Development.

The major efforts in the Planning and Assessment phase, currently in progress, include the identification and definition of priority existing data (a “data dictionary”), the analysis of general application needs, and the development and documentation of inventory standards. As part of the Planning and Assessment phase, an application will be built to demonstrate access to the “dictionary” along with an example of how actual data could be accessed and used for analysis. In this effort, ATRI will benefit from the fine work that has already taken place as part of the Surface Water Integration System (SWIS). And the User Application Development phase will include the incorporation of SWIS, Natural Heritage Inventory, and other existing applications into the ATRI infrastructure.

2. Project Mission

- To establish a current, accurate, integrated, and comprehensive information management system of significant aquatic and terrestrial data which is structured to promote efficient and integrated decision making at a variety of spatial and temporal scales.
- To establish new and maintain existing dynamic, long-term partnerships that result in mutually beneficial outcomes, such as the exchange of quality-assured data.
- To bring reliability to data use through consistent application of department-wide data standards.
- To optimize usefulness of ongoing department inventory efforts for broader decision making.
- To facilitate gathering of new inventory data to fill gaps to improve decision making.
- To acquire, or access existing, discrete data sets for integration into the ATRI information system.

3. Project Alignment with Business Objectives, Technical Requirements, Architectures, or External Influences

The ATRI project is driven by nearly all of the agency’s Technical Requirements. It’s fundamental goals are to provide internal and external customers with ready access to information and data, and to support resource management/decision-making. This project uses the Internet as a vessel for presenting these data to agency staff, external partners and the public, and is dependent upon GIS technologies for providing spatial integration of disparate data. This project, in turn, has significant impact on the Technical, Data, and Application architectures that support information technology.

Appendix D IT Strategic Projects

Aquatic and Terrestrial Resource Inventory (ATRI)

4. Project Timetable

Planned Start Date	Continuing
Length of Project	June, 2003
Milestones: Cookbook for data upload Metadata capture tool Internet data explorer SWIS support DB & standards framework Info system framework Requirements-based app Data extract utility Requirements-based app #2	Date: November, 2000 November, 2000 January, 2001 January, 2001 May, 2001 July, 2001 December, 2001 July, 2002 June, 2003
Expected Life	Indefinite (will keep adding data and requirements-based applications)

5. Technical Features

- Must be compatible with State of Wisconsin E-Government standards and initiatives.
- Must allow conversion and upload of data from a variety of formats, as well as download of data into common formats; a good data conversion tool is essential.
- Will be a Web-based framework for integrating and serving data; depends heavily on budget initiatives that underwrite key hardware and software components related to GIS and the Internet; also depends on the adherence to data standards.
- Must provide metadata to enable appropriate use of the data; needs a tool to support the capture and maintenance of metadata.
- Will provide a framework for building multiple requirements-based applications that share components and run against a broad range of data; depends on successful implementation of multi-tier technology.
- Security requirements include granting access to data based on employment status as well as interests and qualifications; depends on a security model that supports such restrictions.

Funding for ATRI is provided by program base budgets and new resources identified in DIN 5340. This decision item is directly linked to the successful development of this Strategic Project.

6. Project Costs and Benefits

Projected Costs:

Item	FY 02	FY 03	Total
HW	\$0	\$20,000	\$20,000
SW	\$30,000	\$30,000	\$60,000
Contractor	\$140,000	\$100,000	\$240,000
Services	\$0	\$0	\$0
Training	\$5,000	\$10,000	\$15,000
Staffing	\$60,000	\$60,000	\$120,000
Total	\$235,000	\$220,000	\$455,000

Appendix D IT Strategic Projects

Aquatic and Terrestrial Resource Inventory (ATRI)

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change			
Savings			
Avoided Costs	\$100,000	\$500,000	\$600,000

Revenue increases could result from the sale of metadata and actual data. Avoided costs are mainly due to large reductions in staff time currently needed to gather, clean up, and analyze information for delivery and decision-making.

Other expected benefits:

- * Staff and customer awareness of available data.
- * Staff and customer ability to access and analyze available data.
- * Staff and customer ability to assess quality (usefulness) of available data.
- * Promotion of data-driven decisions.
- * More reliable information delivery to agency and partners.

7. Risks Associated With Not Doing

- Lack of awareness of available data.
- Inability to reasonably access and analyze available data.
- Inability to assess data quality and usefulness (lack of metadata).
- Less reliability for data-dependent decision-making.
- Restricted ability to share information with agency and partners.
- Lack of a framework for applications that require broad data access – e.g. SWIS and Wisconsin Waters Initiative.

Author: Jeff Bradisse 7-9657

Project Leader: Erin Baggot 7-7479

Executive Sponsor: Dave Meier 6-0015

Wisconsin Waters Initiative

1. Project Description

Eighty percent of the land along Wisconsin's lakes and rivers is privately owned. Each year, thousands of water-related developments occur throughout the state. The Agency and local governments need to protect lakes and rivers while assisting property owners and industry with water-related developments. Currently, the amount and intensity of water-related developments have simply outstripped the capability of state and local agencies to effectively fulfill their protective role.

The Agency has administered Wisconsin's water law since 1968. Formal proposals to physically alter waterways grew from the hundreds in the early 1980s to nearly 5,000 by 1990. Currently, 42 Agency staff at field stations work annually with an estimated 10,000 private landowners, 500 local governments, and owners of approximately 3500 dams, on issues that directly affect public safety, environmental quality, commerce, industry, and recreation. These customers need prompt responses to information requests and permit applications.

This project establishes a system and processes that support the information needs associated with water permits and regulation. Technologies associated with GIS and the Internet are combined to distribute maps and technical information to the public and private sectors, and provide mechanisms for streamlining permitting processes. These processes also provide mechanisms that ultimately improve data quality and accuracy.

2. Project Mission

- Distribute GIS data libraries to all Water Management Specialists and Engineers.
- Provide mechanisms for efficient updates to spatial data.
- Provide GIS software and training to all Water Management Specialists and Engineers.
- Integrate existing tabular databases with spatial systems and provide methods for assessing accuracy, reliability and fitness for use.
- Develop processes that readily link data collected in the field with Agency data that exist in the 1:24K Hydrography GIS.

The Agency's GIS library and ArcView software provide the tools necessary to support the information needs of Water Management Specialists (WMS) and Water Management Engineers (WME). Implementation of GIS technology in conjunction with data development and other information technology methods provides a way to significantly improve the efficiency and long term quality of WMS and WME operations.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

This project serves the data needs of our staff, partners, and customers, thereby supporting the Agency's business goal of making people our strength. It also provides engineering tools and technical assistance to staff who help to maintain ecosystems and protect public health and safety. This project also addresses the Agency's Technical Requirements that pertain to GIS and the Internet.

4. Project Timetable

Planned Start Date	10/01/99 (ongoing)
Length of Project	4 years
Milestones: Deploy ArcView along w/ hydro & wetlands data Develop Custom Applications Revise Data Collection & Editing Processes Develop floodplain mapping data base and redesign existing tabular engineering studies data base Develop Document Mgmt System Develop Web based information delivery Provide updated floodplain mapping for counties with improved topographic data	Date: January, 2001 April, 2001 July, 2001 January, 2002 July, 2003 July, 2003 July, 2003
Expected Life	10 years

5. Technical features

- ArcView software must be successfully deployed. Training and user support must be in place.
- Data collection methods must be changed to ensure that the locations are verified and linked to the hydrography data layer at the time of collection.
- SDE and Oracle 8i must be part of the Agency's technical architecture.
- Agency staff must have access to county GIS data (parcel, fire number, and building permit data) in Agency-standard formats.

Funding for Wisconsin Waters Initiative is provided by resources identified in DIN 5413. This decision item is directly linked to the successful development of this Strategic Project. The Wisconsin Waters Initiative is dependant on the redesign of the Wisconsin Wetland Inventory for which funding is provided in DIN 5412.

6. Project Costs and Benefits

Item	FY 02	FY 03	Total
HW	\$30,000	\$30,000	\$60,000
GIS SW	\$100,000	\$30,000	\$130,000
Modeling SW	\$30,000	\$30,000	\$60,000
Training	\$10,000	\$10,000	\$20,000
GPS Equip.	\$100,000	\$100,000	\$200,000
Web Devel.	\$50,000	\$50,000	\$100,000
DB link to GIS	\$120,000	\$120,000	\$240,000
App. Devel.	\$200,000	\$200,000	\$400,000
Contractors	\$390,100	\$390,100	\$780,200
Total	\$1,280,100	\$1,210,100	\$2,490,200

Projected Benefits:

Increased property values, reduced flood damages, reduced flood insurance costs. Assumptions used:

- * Average flood insurance premiums are \$400/year.

- * The average cost for a homeowner to prove they are actually out of the floodplain is \$5,000. Assumed 100 homeowners annually.
- * Winnebago County estimates that home values increased approx. \$1 million.

Item	FY 02	FY 03	Total
Savings	\$5,600,000	\$5,600,000	\$11,200,000
Avoided Costs	\$2,000,000	\$2,000,000	\$4,000,000

Intangible benefits:

- * Improved decisions regarding issuance of waterway/wetlands permits.
- * Increased willingness by local government to implement floodplain zoning.
- * Improved access to water management data bases.

Without better information systems, and analysis tools, problems associated with floodplain management will persist, including customer complaints due to poor service, issuance of waterway/wetland permits that damage the environment and floodplain development that puts property and people at risk.

Author: Alan Lulloff

Project Manager: Alan Lulloff

Executive Sponsor: Susan Sylvester

E-Government

1. Project Description

E-Government (E-Gov) is a multifaceted project involving Agency business operations and processes to redefine how DNR staff conduct work and receive internal services, and how they provide services to the citizens and businesses of Wisconsin. E-Gov represents a cultural revolution that is supported by technology. E-Gov is based on a complex Intranet/Internet/Extranet technological infrastructure in state government and the public sector. This infrastructure involves new software and services, additional hardware, and changes that span all four of the Agency's IT Architectures.

E-Gov spans the work of the entire Agency and enables bureaus to implement this technology throughout the five-year planning horizon.

2. Project Mission

The E-Gov project is the direct result of a strategic planning effort that defined a Vision and Goals for the Internet. The DNR Internet Vision statement reads:

"The Internet/Intranet is DNR's preferred technology to enhance the way we serve our customers, support our staff, conduct business with our partners and assist in communicating with our publics." (This means, where possible, the DNR will adopt an "E-Government" approach to doing business and must make fundamental changes in the way it does business to make it happen.)

This vision statement parallels that found in a Draft document entitled **ONLINE WISCONSIN, Project Proposal (General), July 25, 2000** from the Department of Administration:

"The State of Wisconsin will offer on-line to the general public, state business partners, and other parties the services they value. Through the efficient and effective use of the Internet and other technologies, these services will be available from anywhere at anytime.

"In other words, anyone can do anything they need to do with the government from anywhere, any time, privately, securely, and easily. This provision of service will prove a convenience to all concerned and will improve the quality of service and the cost-effectiveness of service delivery.

"What that vision means to:

- "General public" -- The vision means citizens, at their convenience, will be able to find information easily and conduct business readily with state agencies using electronic facilities. When citizens wish service in person, they should be able to receive better attention because more routine cases are being handled electronically. In addition, the cost of operation for state services should be reduced or the level of service should be increased for the same cost.
- "State business and other organizations" -- The vision means that businesses and other organizations should be able to reduce their cost of doing business with the state. Less

staff time should be necessary to provide reports, filings or other requests for information. Information about government programs and requirements will be easier to find and use. More information should be readily available on state programs and responsibilities.

- “Local Government -- The vision means that local government will have lower costs in the support of state programs, have more information about state programs in a timely fashion and be able to interact with the state at the local government’s convenience.
- “State Government Management -- To state government management, the vision means that they will have an opportunity to re-think the provision of programs and streamline outdated processes. Further, it will allow state managers to help recruit the next generation of public servants by offering opportunities to work in an environment that recognizes, for better or for worse, the technology and pace of the 21st century.
- “State Employees -- The vision means that state employees will be offered the opportunity to re-design state government operations. As Internet technologies become more prevalent, employees will have more impact on *{the actions in}* their programs. They will also build and maintain skills that are recognized throughout the labor market.
- “State Political Leaders and Executive Management -- State political leaders and agency executive management will be able to meet the rising expectations of their primary stakeholders, the voters. These expectations will increasingly be driven by what individuals and organizations can do in the private sector.”

The DNR has further defined how it will use the Internet:

- The DNR will use the Internet to serve our customers by:
 - Providing easy, round the clock access to integrated and personalized information and data.
 - Selling licenses and applications, registering recreational vehicles and boats, collecting and approving permits.
- The DNR will use the Internet to support our staff by:
 - Providing consistent, up to date information and guidance.
 - Providing education and training through video based Web technologies.
 - Streamlining administrative processes like expense reporting, time and attendance reporting, vehicle scheduling, and work-planning.
 - Providing E-mail, collaborative work environments and services.
- The DNR will use the Internet to conduct business with our partners by:
 - Sharing data and information.
 - Buying and paying for goods and services.
 - Providing links to partners’ Internet sites.
- The DNR will use the Internet to communicate with our public by:
 - Sharing plans and collecting public comments.
 - Providing a portal to services, rules, regulations and recreational information.

E-Gov will also promote the integration of services to present a single customer service perspective. E-Gov will define services across organizational boundaries regardless of section, bureau, division or department providing them.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

The Internet is a delivery mechanism which can help accomplish DNR Strategic Goals and most Objectives. In addition, the following Technical Requirements drive the need for instituting and supporting E-Gov:

- Fully support the Internet as a tool for information exchange, access, and business transactions with internal and external customers.
- Design IT education, training and support infrastructure to deliver services to DNR staff which facilitates application of technology to DNR program objectives and activities.
- Develop and deploy technology so that all DNR staff and customers have access to information that will enable them to better perform their jobs, and make informed decisions regarding the state's natural resources.

Through the next biennium and beyond, the department has four primary Internet goals: serve customers, support staff, conduct business, and communicate with the public over the Internet and World Wide Web. These goals directly support the DNR Strategic Goals and Objectives.

1. Serve customers:
 - * Establish seven-day by 24-hour fast access to information and on-line services.
 - * Develop 'E-commerce' to enable customers to complete secure transactions with the department.
 - * Establish interactive, dynamic and personalized interface with data/information.
 - * Meet cross-program customer needs and monitor performance.
 - * Establish ongoing assessment of content.
 - * Recruit paying customers from non-traditional sources.
 - * Identify the Internet opportunities with the best return on investment.
2. Support staff:
 - * Develop efficient and effective workflow.
 - * Provide effective training and education.
 - * Foster quick, easy authoring and new development.
 - * Build an effective 'E-infrastructure.'
 - * Build an internal and external human resource pool to enable new development.
3. Conducting business:
 - * Establish Websites for review and comment on plans, studies, new policy development and promote public involvement through Internet.
 - * Foster 'transparency' where resources are shared, boundaries are softened and customers and stakeholders complete aspects of the work for efficiency and cost avoidance.
 - * Identify and engage 'benefactors' of Internet services (go beyond day to day partners).
4. Communicate with the public:
 - * Use the Internet to enhance marketing and outreach activities
 - * Provide information resources
 - * Pursue partnership opportunities to promote and market WI and DNR.

Examples of E-Gov projects that either have been implemented or are under development include Travel Expense, FACT, Wisconsin Waters Initiative, Environmental Management System,

Aquatic Terrestrial Resource Inventory, clickable maps, and other Geographic Information System delivery mechanisms.

4. Project Timetable

Planned Start Date	9/15/00
Length of Project	5 years
Milestones: Organization Policy Process and Technology	Date: January, 2001 July, 2001 January, 2004
Expected Life	Indefinite (infrastructure which must keep evolving)

5. Technical Features

E-Gov is dependent upon IT infrastructure components that do not exist today, and need to be developed. The development of these IT components are linked to and dependent upon new funding identified in the Secretary's Critical Initiative, "Internet Infrastructure".

In addition to that Critical Initiative, there exists three other budget initiatives that are linked to E-Gov. These initiatives underwrite new program activities, but the resources identified in these initiatives do not significantly impact E-Gov as a whole. These initiatives are:

- ◆ DIN 5307 Commercial Fishing Reporting System
- ◆ DIN 5200 IT Customer Response
- ◆ DIN 5201 Air and Waste E-files

The following features are infrastructure components that support the E-Gov effort. Many IT Strategic Projects and other applications are dependent on some or all of these IT features. For instance, selling licenses over the Internet will require different features than the secured collaboration on rule making policies for particular industry groups.

- Security
- Re-design current Web presence
- Personalization including usability, navigation, presentation
- Collaboration
- Storefront
- E-payment
- E-commerce
- Information access forum/Frequently asked questions
- Technical Support including system capacity, resource management and reporting, Help Desk administration
- IT customer assistance Web page

Numerous risks are associated with a successful implementation of E-Gov. Although the above features can be considered sub-projects from a management standpoint, all are required to support E-Gov. A complete infrastructure is required to produce a complete electronic environment. Additional risks result from the “Digital Divide”, or the partial representation of the citizenry who have access to Internet technology. This Divide and associated risks are expected to lessen in time.

There are external factors that will influence the success of the E-Gov project at the DNR. This includes the successful implementation of services at the state enterprise level. Forty-eight projects have been currently identified at DOA, InfoTech, and the timetable of these initiatives will define the timetable for DNR projects. Some of these include Storefront, E-payment, WIMAP, and common directory services.

Dependencies:

- External Partners: We are dependent on the ability of external partners who are identified to be integral to the decision-making policies for the Agency’s Environmental Management System (EMS). The partners should be able to participate at high levels, and feel comfortable with their access to this process. Designing an IT solution to address this success factor is crucial.
- Internet Strategy/ E-Government: We are dependent on the organizational infrastructure to support us with policies and procedures on the concerns listed under issues.
- Existing Data/Applications: Because some of the data to be evaluated for measurements may exist in scattered DNR databases, it is important that the EMS databases integrate with/rather than duplicate information. To this extent we are dependent on current data and application structures
- Record keeping structures: We are dependent on working with current record keeping structures at the DNR and the legal statutes associated. This means that current records must be assessed and redefined where appropriate. We must also determine if legal authority exists to collect this information.
- Internet Standards: We are dependent on current acceptable Internet practices/technologies available for the Internet both at the DNR/State level, and for the entire Internet/World Wide Web.

6. Project Costs and Benefits

For the 1-2 year time frame:

Projected Costs: Include in a table for FY 01-03 timeframe, for each fiscal year, the total costs for components which include hardware, software, contractor, services, training and staffing.

Item	FY 02	FY 03	Total
HW	\$285,000	\$285,000	\$570,000
SW	\$200,000	\$200,000	\$400,000
Contractor	\$350,000	\$500,000	\$850,000
Services	\$100,000	\$200,000	\$300,000
Training	\$325,000	\$150,000	\$475,000
Staffing	\$300,000	\$700,000	\$1,000,000
Total	\$1,560,000	\$2,035,000	\$3,595,000

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change	\$1,000,000	\$3,000,000	\$4,000,000
Savings	\$ 500,000	\$1,500,000	\$2,000,000
Avoided Costs	\$1,300,000	\$2,600,000	\$3,900,000

Criteria Used for Benefits:Revenue Change:

- * Solicitation of advertising
- * Site referral
- * Transaction fees
- * Coordinated related services
- * Land owner and resource information exchange
- * On-line sales of resource specific products
- * Resource map sales

Savings:

- * Printing costs
- * Paper costs
- * Mail costs
- * Travel and expense costs

Avoided Costs:

- * Staff time, 15 minutes per week person first year, 30 minutes per week second year
- * Approval related time
- * Purchase order and invoice processing

Intangible benefits:

- * Streamlined services to staff and citizens
- * Increase public and commercial involvement
- * Services anytime anywhere
- * Improved information delivery services

The risk of not providing the E-Gov services over the Internet are numerous: Citizens demand and will judge government services by what they receive from the private sector. Failure to perform according to industry standards could result in public criticism, legislative impatience and micro-managing, crippled relationships with the regulated community, and loss of budgetary and popular support for the agency. There is the risk of losing tourism dollars by not delivering recreational related information and services to a larger audience that crosses state lines.

Project Author: Brian G. Wilmot

Project Leader: TBA

Executive Sponsors: Dave Morehouse, Darrell Bazzell

Environmental Management System

1. Project Description

In September, 1999, the Department's Leadership Team approved proceeding with an Environmental Management System pilot project for the Department. The project was seen as an opportunity to provide leadership in the use of environmental management systems for other state environmental and resource management agencies as well as for the regulated community in Wisconsin. The purpose of the project is to assess whether an EMS can improve:

- Our environmental performance related to our primary activities of policy development, program management, and environmental regulation and compliance.
- Our environmental performance related to our daily operations and procurement activities.
- Our ability to encourage industries to develop their own environmental management systems.

The pilot project will implement five organizational Environmental Management Systems and will third-party register at least three of those to the ISO 14001 standard. Components of an agency-wide EMS infrastructure will also be implemented, including development of an agency-wide environmental policy statement, education plan, management review program, and document and operational control system. The five sites in the pilot project are:

- Spooner Service Center and Campus
- Lake Kegonsa State Park
- Waste Bureau
- Air Program – Foundry Partnership
- Air Bureau – Bureau Operations.

The scope of the IT component of the EMS project is to determine best practices for long-term full-scale implementation of the EMS. The scope has been limited to:

- Content Management Software – enable workflow of the continuous quality improvement process, including archiving and version control.
- Personalization Software – customize information delivery for separate audiences that include staff, management, partners, stakeholders, and the public.
- Data development and integration – collect measurements related to the achievement of environmental objectives and targets.
- Web-enabled collaboration – allow internal and external project participants to collaborate on work products.
- Develop agency-wide policies and procedures to enable E-Government.

The IT component will be implemented in 4 phases:

- Pre-phase: includes the development of a Website to accommodate basic documentation and other Web publishing needs before data collection. This phase will continue until the development of a Website to accommodate external partners is completed.
- Phase 1: includes the development of an initial measurements database and its Web interface. It will integrate with current DNR databases where appropriate. Some type of granular security will be implemented to allow external partners to input data online. This phase will also include the analysis of content management and personalization software solutions.
- Phase 2: checks the assumptions from Phase 1 and workflow enables the project via some type of content management/personalization software.
- Phase 3: addresses the issues of scale in moving from pilot to full-scale implementation.

2. Project Mission

The IT component of the EMS project will:

- Serve as an agency pilot to test content management software as a tool to enable the workflow of the continuous quality improvement process, including archiving, version control and collaboration.
- Serve as an agency pilot to test out agency-wide Web policies and procedures for security, legal issues, useability, personalization, database standards and integration.
- Serve as an agency pilot to test personalization software as a tool to target specific information to specific audiences including, staff, management, regulated community, environmental groups, and the public.
- Integrate existing systems for workplanning and performance measures.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

This project addresses three Strategic Business Goals: Making People Our Strength, Sustaining Ecosystems, and Protecting Public Health and Safety. EMS data standards and data delivery systems should provide staff and customers with easy access to data and information associated with resource management and environmental standards.

4. Project Timetable

Start Date	4/1/00
Length of Pilot Project	20 months
Milestones: <ul style="list-style-type: none"> * Determine security, data, and legal Web policies and procedures. * Redesign pilot Website around stakeholders. * Evaluate content management and personalization vendors. * Design stakeholder Web templates. * EMS workflow enablement via Web content management software. * Assess pilot results and develop recommendations for full-scale implementation. 	September, 2000 September, 2000 October, 2000 September, 2000 March, 2001 December, 2001
Expected Life	Indefinite: (infrastructure which must keep evolving)

5. Technical features

- Will be compatible with State of Wisconsin E-Government standards and initiatives.
- Will integrate with current Department data.

6. Project Costs and Benefits

Projected Costs:

Item	FY 01	FY 02	Total
HW	\$50,000		\$50,000
SW	\$200,000		\$200,000
Contractor	\$200,000		\$200,000
Training	\$20,000		\$20,000
Staffing	\$50,000	\$75,000	\$125,000
Total	\$520,000	\$75,000	\$595,000

Projected Benefits:

Item	FY 01	FY 02	FY 03	Total
Avoided Costs (staff time)	\$25,000	\$100,000	\$100,000	\$225,000

- * Increased productivity of environmental management system.
- * Increased buy-in from external stakeholders due to ability to collaborate on documents and data and having targeted information personalized for specific audiences.
- * Software will be piloted for other uses within the Department.
- * Increased data integration within the Department.
- * Reduced environmental impact by regulated community.

7. Associated Risks and Dependencies

Risk Name	Risk Type	Level	Diminished by
1. Lack of Security Policy	Getting started	High	<ul style="list-style-type: none"> ➤ Getting appropriate decision-makers and subject level expertise in groups to make appropriate policy in an E-Government structure.
* The Agency needs a security policy in place to account for the granularity necessary to Web enable the EMS system. If this does not happen the Agency will not use the Web as a tool for collaboration and measurements gathering. This will increase greatly time/resources taken to do the pilots to the extent of stakeholder involvement that has been currently designated by the core team.			
2. Lack of Legal Policy	Getting started/ Best Practices	High	<ul style="list-style-type: none"> ➤ Getting appropriate decision-makers and subject level expertise in groups to make appropriate policy in an E-Government structure.
* Policies/approvals must be in place to enable external partners to input data. Without these approvals, the Agency will not be able to use the Web as a tool for collaboration and measurement gathering. This will greatly increase the time/resources taken to do the pilots to the extent of stakeholder involvement that has been currently designated by the core team.			

3. Data not integrated with current systems	Best Practices	High	<ul style="list-style-type: none">➤ Analyze data integration needs and set integration as high priority in database development.➤ Work with current data structures and projects to help ensure data integration.
* If the Agency cannot work with information that is currently located in different databases that are specific to the pilot sites aspect identification, then we run the risk of data duplication. This might have a short term time/cost benefit, but it will be a long term time/cost nightmare.			
4. Lack of/Incongruent E-Government Structure and Internet Strategy	Getting Started/ Best Practices	High	<ul style="list-style-type: none">➤ Set up E-Government organizational structure in order to meet policy needs of EMS within an Enterprise business and technology structure.➤ Make sure goals of Web enabling collaboration, and data integration are part of Internet Strategy.
* If there is not an Enterprise strategy for dealing with some of the policy and implementation issues for Web enabling EMS, there is the real risk that EMS will be making inappropriate decisions for the larger agency needs. It is important to have an organizational structure that facilitates the process of getting information to stakeholders.			
5. Lack of Usable Website for stakeholders	Best practices	Med	<ul style="list-style-type: none">➤ Getting appropriate decision makers and subject level expertise in groups to make appropriate policy in an E-Government structure.
* The Website needs to be redesigned to accommodate businesses and to make information easily accessible for stakeholders. If we can not get appropriate staff to make decisions on usability, personalization, and presentation to these stakeholders, then there is a real risk that stakeholders will not be able to find the appropriate information. This will fail the primary goal of working more closely with partners and the regulated communities, both stated in the objectives for the EMS.			

Author: Susan Hoops

Project Leader: Susan Hoops

Executive Sponsor: Darrell Bazzell

IT Project Identification, Prioritization, and Funding

1. Project Description

IT funding has historically been based on individual sub-program needs and available funds that may or may not be tied to the highest business priorities of the Agency. This funding strategy limits IT development to meeting the needs of individual sub-programs but often ignores the needs of the Agency as a whole.

DNR reorganization and the update of the Strategic Business Plan have affirmed the need to integrate program services to deliver them efficiently. There is a growing demand from our partners and customers to exploit IT tools to improve communication and streamline access to data and applications. As a result, there is a greater need to examine systems development and technology deployment from an enterprise-wide perspective. The focus of this project to develop a policies and a processes to manage and fund information technology on a Department-wide basis.

2. Project Mission

- Create and implement processes for identifying and prioritizing IT initiatives and projects
- Create and implement mechanisms for funding enterprise-wide IT projects.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

IT is an agency asset and resource which is essential to the successful implementation of the Department's strategic business plan. The project supports all of the technical requirements but is directly related to Tech Req. A: Establish mechanisms to identify, fund, develop, implement and manage enterprise wide integrated technology, data and applications that are agency driven and reinforce performance measurements. The project supports all four architectures but is most directly related to the organizational architecture.

4. Project Timetable

Start Date	January 1, 2000 (ongoing)
Length of Project	2 years
<i>Milestones:</i> Develop processes for Project Identification Develop processes for Project Prioritization Identify Mechanisms for IT Funding Develop implementation plan Implementation	July, 2001 November, 2001 March, 2002 July, 2002 December 2002
Expected Life	Indefinite

Appendix D IT Strategic Projects

IT Project Identification, Prioritization, and Funding

5. Technical features

Implementing this project may require some changes to existing processes that will not be easily accepted by all agency staff. The rate of change in information technology is so rapid that it will be difficult to develop a process that can respond effectively.

6. Project Costs and Benefits

This project will work to change existing processes but will not itself incur significant cost other than staff time.

Staffing:

Secretary's Staff Participation/Sponsorship
Finance
Management & Budget
BEITA
BIZWIZ Team Members
Region Representatives (5)
Division Representatives (5)
Facilitator
Consultant
TOTAL HOUR ESTIMATE

Hour Estimate:

60
80
80
200
800
40
40
160
800
1460

Projected Costs:

Item	FY 02	FY 03
HW		
Software		
Contractor	\$40,000	\$40,000
Services		
Training		

By providing funding for enterprise initiatives, program initiatives will have a more solid foundation. This should reduce the time it takes to complete program projects and will not require programs to expand to the scope of their projects to build infrastructure.

Projected Benefits:

Item	FY 00-01	FY 01-02
Revenue Change		
Savings		\$500,000
Avoided Costs.		\$500,000

7. Associated Risks and Dependencies

Risks associated with not completing this project:

- Agency's IT efforts may not reflect the business needs of the Agency.
- IT resources may not be directed at high-priority needs.
- Strategic IT Projects may not receive appropriate funding and their success may be jeopardized.

Author: Al Lulloff

Project Leader: BIZWIZ

Executive Sponsor: Darrell Bazzell

Data Repository and Metadata

1. Project Description

Comprehensive data-related standards, procedures, and policies currently are not in place. These standards are needed to facilitate the efficient integration of data among Agency programs and partners. The Agency currently approaches the collection, maintenance, storage and documentation of its data on a project-by-project basis. The result is an environment in which multiple programs often spend resources and time to collect, store, support, and process redundant data. This project-based approach and lack of data-related standards, procedures, and policies also hinders access to, understanding of, and integration of agency data. In order to increase the efficiency and effectiveness of its data collection, maintenance, storage and documentation activities – and to make its data more useable for multiple customers and purposes – the Agency must:

- Improve the availability of standard tools to produce data documentation and metadata.
- Improve Internet and Intranet access to data documentation and metadata.
- Improve tracking and management of data documentation and metadata.
- Reduce redundant data collection, storage, support, and processing costs throughout the agency.
- Promote adherence to appropriate data standards, policies, procedures, etc. to facilitate integration of data from multiple project sources.
- Facilitate planning for data warehousing.

2. Project Mission

This project identifies the key components of a central data repository, and builds an infrastructure that supports it. This central data repository must support a data collection and management environment where shared, standardized data flows into and out of centralized, subject-oriented databases as needed. The specific objectives of this project are to:

- Investigate the establishment of a “central data repository” to contain and provide access to documentation (e.g., custodianship, lineage, and quality information) and metadata (e.g., data models, data dictionaries) about DNR’s shared data assets, and to facilitate “data warehousing” within the agency.
- Identify stakeholders and ways to engage them in central data repository activities.
- Research data repository and warehousing tools and techniques used by industry and other Wisconsin agencies.
- Provide recommendations for developing the necessary infrastructure (e.g., policies, standards, procedures, hardware, software, staffing) to support central data repository and warehousing functions that support DNR’s business needs.
- Begin acquiring and implementing the recommended data repository infrastructure and warehousing components.
- Make central repository documentation, metadata and tools available through the Intranet or Internet, depending on the needs of individual customers.

3. Project Alignment with Business Objectives, Technical Requirements, Architectures, or External Influences

Many DNR business and information technology strategic plans call for improved customer access to DNR data and better integration of the agency's data (and the management systems and processes associated with these data). Building and maintaining a central data repository and warehousing functions would help the Agency achieve these goals. In addition, several other state agencies (e.g., DOA, DOT, DHFS, DWD) are currently investigating central data repository and warehousing tools and techniques. This project would allow DNR to cooperate and provide meaningful input and guidance in these inter-agency efforts.

This project has considerable impact on the Technical, Data and Application architectures.

4. Project Timetable

Planned Start Date	July 1, 2001
Length of Project	5 years
Milestones Hire consultant Consultant researches data repository tools and techniques and prepares report with recommendations Develop infrastructure policies, standards, procedures, etc. Acquire data repository software and hardware. Make data repository documentation, metadata and tools available via the Internet/Intranet as appropriate	Date: September, 2001 June, 2002 January, 2003 March, 2003 July, 2003
Expected Life	Indefinite (documentation and metadata will continually be added and maintained in the central data repository)

5. Technical Features

In FY'02, this project is dependent on the funding available to hire a consultant to identify stakeholders and research the infrastructure components that DNR would need to have in place to implement a successful central data repository and to plan for data warehousing. The consultant would also be responsible for producing the final report of recommendations in FY'02. In FY'03, funding would be needed to acquire the recommended repository software and hardware and to ensure that central repository documentation, metadata, and tools are available to appropriate customers via the Intranet/Internet.

6. Project Costs and Benefits

Projected Costs:

Item	FY 02	FY 03	Total
HW ¹	\$0	\$100,000	\$100,000
SW	\$0	\$50,000	\$50,000
Contractor	\$150,000	\$100,000	\$250,000
Services	\$20,000	\$20,000	\$40,000
Training	\$10,000	\$15,000	\$25,000
Staffing	\$0	\$0	\$0
Total	\$180,000	\$285,000	\$465,000

¹The hardware cost does not include the cost for a server that will be required for the Data Repository.

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change			
Savings			
Avoided Costs	\$200,000	\$700,000	\$900,000

Avoided costs are mainly due to reductions in staff time currently needed to gather, clean up, analyze data and the collection of redundant data.

Intangible benefits:

- * Data policies and processes would increase data-related efficiencies and improve customer service.
- * Data standards will improve data quality and consistency.
- * Increased data integration will enable Web services.

7. Associated Risks and Project Dependencies

Risks associated with not implementing a central data repository in DNR include:

- Continued funding and time spent on redundant data collection and storage.
- Continued funding and time spent on redundant processes to maintain and manage redundant data (e.g., keeping data synchronous in different systems, or extracting and moving data between different systems).
- Continued funding and time spent searching for data in different systems and converting these data into one format.
- Lost opportunities to provide meaningful input during inter-agency discussions about data repository and warehousing issues.
- Costs of poor business decisions based on conflicting or ambiguous data from different sources.

This project supports or is considered interdependent (in part) on several strategic initiatives that have data related components:

- Framework GIS & Data Collection
- Distributed GIS
- Surface Water Integration System (SWIS)
- Wisconsin Waters Initiative
- Aquatic and Terrestrial Resource Inventory (ATRI)

Project Author: Lisa Morrison (264-8911)

Project Leader: Lisa Morrison

Executive Sponsor: TBA

Agency IT Performance Standards and Measures

1. Project Description

Duties performed by agency staff and services provided to customers are often dependent upon information technology. Staff are expected to have the computer skills to perform the variety of tasks that are expected of them. Although staff are dependent upon these IT skills to enable tasks or achieve efficiencies, IT performance standards for agency personnel do not exist, and benchmarks for testing have not been established. Without these standards and benchmarks, it is difficult to identify needs for staff training and establish programs that address these needs. This project is intended to establish **minimum** levels of proficiency in the use of the agency's IT capabilities by employees and determining the degree to which those standards are satisfied.

2. Project Mission

The general mission of this project is to establish procedures and guidelines for specifying the target levels for each staff person as well as appropriate mechanisms for assessing performance vis-à-vis these levels.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

The training program is part of the agency's IT infrastructure that aligns with a number of DNR's Business Objectives for the use of IT. These include:

- Establishing a mechanism to identify, fund, develop, implement and manage enterprise-wide integrated technology, data and applications that are agency driven and reinforce performance measurements.
- Redesigning IT education, training and support infrastructure to deliver services to DNR staff which facilitates application of technology to DNR program objectives and activities.
- Reengineering BEITA to support the business and technology needs of the DNR. The culture vision, mission, performance measures, funding, staffing, resource allocation and organization structure of BEITA should be aligned with, and supportive of, the business needs of the DNR; and should effectively use the IT resources of the agency at large.
- Develop and deploy technology so that all DNR staff have timely access to the data, systems, and communication tools that will facilitate creative, responsive, effective and efficient performance.

Appendix D IT Strategic Projects

Agency IT Performance Standards and Measures

4. Project Timetable

Planned Start Date 10/1/2000	Continuing Starts 7/1/2001
Length of Project	2 Years
Milestones: Workgroup to define standards Procedures/guidelines for minimum standards published Performance measures established and published All management signoffs completed	 10/1/2001 11/1/2001 4/1/2002 6/1/2003
Expected Life	Indefinite (infrastructure which must keep evolving)

5. Technical features

- Must be compatible with State of Wisconsin government standards and initiatives.
- Must be able to respond to demand for large volumes of training to support agency IT initiatives (e.g., conversions to new releases of standards like MS Office).
- Must comply with state personnel rules.

6. Project Costs and Benefits

Item	FY 02	FY 03	Total
HW	\$0	\$?	\$?
SW	\$25,000	\$?	\$?
Contractor	\$50,000	\$0	\$50,000
Services	\$10,000	\$0	\$10,000
Training	\$15,000	\$0	\$15,000
Staffing	\$90,000	\$?	\$?
Total	\$160,000	\$?	\$?

Projected Costs:

- * SW is for possible purchases of evaluation copies of suitable commercial applications that might facilitate setting standards and monitoring performance.
- * Contractor is for a professional with related experience that might help group reach decisions.
- * Services are for miscellaneous expenses, travel, etc.
- * Training is for attendance at classes, conferences, etc that offer instruction related to goals of project.
- * Staffing is for internal staff time for workgroup participants.

Appendix D IT Strategic Projects

Agency IT Performance Standards and Measures

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change	\$0	\$0	\$0
Savings	\$0	\$0	\$0
Avoided Costs	\$0	\$0	\$0

Projections for costs in Year 2 and for benefits is not seen as reasonable at this time given the uncertainties outlined under RISKS below. Costs in second year will be a function of how agency proceeds – could be large.

Possible projected benefits:

- * Staff and customer awareness of available data.
- * Staff and customer ability to access and analyze available data.
- * Staff and customer ability to assess quality (usefulness) of available data.
- * Promotion of data-driven decisions.
- * More reliable information delivery to agency and partners.

7. Associated Risks and Dependencies

Setting standards for proficiency in the use of IT tools is an extremely complicated issue. Much depends on the nature of individual jobs, thorough knowledge of the capabilities of the IT applications, and a full understanding of how to apply the IT capabilities to job functions.

For example, what features of Word would all staff be expected to be able to use at a minimum? What would be the minimum for a program assistant expected to handle correspondence for many staff? And how does knowledge of the capabilities of an application affect the choice of standards? To illustrate, once a course was offered on how to extract WISmart and PALS data with Excel and Access, the interest in Excel and Access training increased among staff who use these data sources for planning, budget monitoring etc.

Furthermore, the complexity is increased by several factors:

1. The inherent variability that exists in jobs and the degree to which IT applications can be used to satisfy different requirements.
2. The constant upgrades in IT functionality and capabilities that necessitate a reassessment of how the tools can be best utilized.
3. Changes in job definitions that necessitate a reassessment of how the tools can be best utilized.

Number 1 suggests that the minimums for jobs will vary beyond any general requirements that may be set for all staff. Two and three raise the need for procedures that will allow quick revisions to both standards and performance measures as new releases and applications are introduced.

Setting standards and performance measures will entail a significant effort to implement well. Depending on how it is done, there would be major cost implications (both in time and dollars) associated with setting standards for staff, training, support, and the performance measurement process (e.g., testing programs). The costs for these task likely will prove substantial no matter how they are accomplished, but can vary widely depending on the final means by which they are done.

There also will be implications for current practices related to training and performance reviews that would represent a dramatic change in the prevailing approach. For example, if staff are expected to demonstrate levels of proficiency, they will need support to take training that will enable them to achieve those levels if they are below the targets. Access to training currently is often more restricted

While BEITA certainly would have a role in explaining the capabilities of the IT infrastructure and how they might apply to job functions as well as tools to facilitate performance measurement, it is not the unit that should be setting the standards and how performance against the standards is measured. These responsibilities seem more appropriate for HR and program managers. However, it is not clear that HR and the program managers have the resources or inclination to undertake these tasks given the workload involved and possible implications for budgets..

Dependencies:

1. Available staffing resources in HR, ET, and program bureaus to undertake workgroup effort.
2. Agency management support to undertake effort given the implications for costs and changes in existing operations.
3. Funds for outside consulting and other services for needed assistance with objectives.

Project Author: Pat Powers – ET/8

Project Leader: Needs discussion for locating leader in appropriate unit in agency – HR I suggested as one possibility.

Executive Sponsor: Sharon Michel – ET/8

IT Application Lifecycle Management Methodology

1. Project Description

The DNR Strategic Business Plan has highlighted the need to integrate program services in order to deliver them efficiently. There is also a growing demand by our partners and customers to exploit information technology tools to provide better and consistent communication, data and application access. As a result, there is a greater need to examine systems development and technology deployment from an agency (enterprise-wide) perspective. This requires that the methodology used for developing and reviewing applications¹ be refined, streamlined, and supported through work planning.

Having a documented, repeatable process for developing and maintaining applications over their life cycle is fast becoming a requirement in IT shops that are focused on delivering business value. The basic life cycle consists of the following phases:

- Planning: determine the feasibility for a project to proceed. Production of a high-level overview document for management review. Management approval and funding for project and for ongoing maintenance for the application is necessary before proceeding.
- Definition: define who, what, when, and how of the project. Creates the project management plan for the project.
- System Analysis: document users' needs for the system. Emphasis on what the application is to do.
- Design: how the application will be built.
- Build: development, unit testing, and integration testing of the components of the application.
- Deployment: carry out the user and acceptance testing of the application and release of the application for use by the user(s).
- Maintenance/support: ongoing need to correct problems/errors in the application, port applications to new releases of software (Operating System or application (Oracle, Developer, SAS)), answer user questions, etc.
- Archiving: remove application from production when no longer needed or a new application/version is built. Application, data, documentation, forms, etc. need to be stored for future reference. Management involvement is necessary.

These phases need to be documented and followed whether projects are contracted, done in-house by BEITA, or done by program bureau staff. The process needs to be flexible enough to handle even small projects (less than 40 hours) without adding unnecessary bureaucratic burdens.

Throughout the life cycle, a formal change control/management process needs to be adopted that:

- Defines the roles and responsibilities of all players in the life cycle.
- Provides order to the workflow.
- Requires and controls communication between the players (user bureau/team, application programmers (BEITA, contractor, or user bureau), database administrator, data administration, change control agent, management, etc.).
- Enhances the quality and timeliness of the application.

¹ Application is used in its broadest sense. This includes computer program, application system (collection of interrelated computer programs), database, table in a database, Web page, etc.

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IT Application Lifecycle Management Methodology

- Provides/formalizes review requirements and sign-off points within and between the life cycle phases for all applications.
- Provides version control and security.
- Defines reporting and auditing requirements.

2. Project Mission

I.T. applications are agency assets and resources which are essential to the successful implementation of the Department's strategic business plan. The goals of the project are as follows:

- Development of a formalized life cycle application methodology for all IT applications within DNR.
- Change control/management process integrated into application life cycle.
- Using model life cycle methodology from other source, such as that used by British Columbia's Ministry of Environment, Lands & Parks rather than starting from scratch.
- Management endorsement for the Application life cycle methodology.
- Management handling of deviations from the process.

3. Project Alignment to Business Objectives, Technical Requirements, Architectures, or External Influences

This project aligns with all of the Technical Requirements as all rely on having an application life cycle methodology. Of the four architectures, the project is most directly related to the Application Architecture.

4. Project Timetable

Planned Start Date	7/1/01
Length of Project	1 years
Milestones: Team organization Process written Standards & Forms written	Date: August, 2001 November, 2001 March, 2002
Expected Life	Indefinite (infrastructure which must keep evolving)

5. Technical features

The Life Cycle Methodology should consist of a process/work flow document and a number of standards and forms that are used within the process.

Dependencies: The project is partly dependent on the priority setting aspects of the strategic project entitled IT Project Identification, Prioritization, and Funding

Appendix D IT Strategic Projects

IT Application Lifecycle Management Methodology

6. Project Costs and Benefits

Staffing:

For development:	Hours
▪ Carrie Roesch - IT Architect	150
▪ Phil Stark	150
▪ Helen Schmedeman	200
▪ Jeff Bradisee	200
▪ Mike Bohn	200
▪ Kenny Parsons	200
▪ Brian Wilmot	200
▪ Program staff	800
▪ Support staff	200
▪ Brenda Hagman - CIO	200
▪ Bizwiz	1200
	3700
For ongoing operations:	Hours
▪ Carrie Roesch - IT Architect	40
▪ Phil Stark	40
▪ Helen Schmedeman	80
▪ Jeff Bradisee	80
▪ Mike Bohn	80
▪ Kenny Parsons	80
▪ Brian Wilmot	80
▪ Support staff	80
▪ Brenda Hagman - CIO	10
▪ Bizwiz	60
	630

Projected Costs:

Item	FY 02	FY 03	Total
Software	\$70,000		\$70,000
Contractor	\$90,000		\$90,000
Services	\$50,000		\$50,000
Training	\$10,000		\$10,000
Staffing	\$220,000		\$220,000
Total	\$440,000		\$440,000

Appendix D IT Strategic Projects IT Application Lifecycle Management Methodology

Projected Benefits:

Item	FY 02	FY 03	Total
Revenue Change	0		0
Savings	0		0
Avoided Costs	0		0

Intangible benefits:

- * Problem prevention
- * Improved Communication
- * Better use of existing resources
- * Better planning of projects involving change

7. Associated Risks and Dependencies

The greatest risk facing the successful implementation of the project is lack of management commitment to the process. In order for the process to work, all application development must be covered by the process, no matter the size of the project nor who is doing the programming.

Project Author: Eugene L Lange
Project Leader: BIZWIZ Team
Executive Sponsors: Jay Hochmuth